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British Transport Commission

THE British Transport Commission, the appointment of the members of which we recorded last week, has lost no time in commencing its task. The Minister's announcement that Sir Cyril Hurcomb would be Chairman, and Lord Ashfield, Sir William Wood, and Lord Rusholme would be the members, was made on August 8, and on August 13 the Commission held a preliminary meeting at 55, Broadway, S.W.1, which, by arrangement with the London Passenger Transport Board, is to be the headquarters of the Commission as soon as arrangements for staffing have been made. On August 13 also, the Minister of Transport announced that the salaries authorised for the positions of Chairman and full-time members of the British Transport Commission were £8,500 and £5,000 a year respectively. In view of the comparative smallness of these sums it is permissible to question whether the Government will adhere fully to its decision that membership of the Commission is to be a full-time occupation in the strict sense of the term, or whether members will be permitted to retain any directorships they may hold with outside interests. It seems clear at least that the level of salaries which has been announced may make for difficulties in promotion of some railway officers.

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Argentine Railway Equipment Purchases

The President of the Central Bank of Argentina is reported to have made a public statement to the effect that it would cost some 400 million pesos (approximately £23·4 million) a year to re-equip the Argentine railway system. The period during which this would be spent was not stated, but our Buenos Aires contemporary, *The Review of the River Plate*, suggests that it is probably permissible to fit this rehabilitation programme into its appropriate place in the Argentine five-year plan, and to estimate that a total of some 2,000 million pesos are to be spent on this item. Although some of this money will be spent in Argentina, the urgency of the need for transport supplies as well as the highly technical nature of most of the equipment required makes it reasonable to assume that a large part of it will be purchased abroad. It is interesting to note that recently the Government authorised the State Railways Management to entrust its overseas purchases of equipment to the Trade Promotion Institute. This authorisation, it appears, was requested of the Government by the State Railways, and the latter undertook to provide the necessary technical guidance, and to leave the commercial aspect of the matter entirely to the Institute.

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Future of the British-Argentine Railways

In another public address made recently by the President of the Central Bank of Argentina, he let it be known that when the purchase of the British railways in Argentina is completed, and the transfer of the systems to Argentine ownership is made, it will not be a case merely of incorporating them in the existing State Railway system. Together with the latter, they are to be amalgamated to form a single vast railway enterprise. *The Review of the River Plate*, therefore, suggests that, as the contract of the purchase of the British railway companies bears Senor Miranda's signature as President of the Trade Promotion Institute, and as he is also President of the Central Bank, the recently-authorised overseas purchases of railway equipment may prove a preliminary exercise, and that in the process the Institute will prepare itself for the handling of very much heavier purchases of railway equipment for the new railway system that is to be created.

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Employment in the Carriage and Wagon Industry

In view of the need both at home and overseas for higher production of railway carriages and wagons, and the increasing appreciation of the necessity for granting priority to the production of these vehicles, it is encouraging to find that recent statistics issued by the Ministry of Labour record a substantial influx of workers into this industry. In May this year, according to *The Ministry of Labour Gazette*, the total labour force engaged in the production of railway carriages and wagons was 58,800, or some 4,000 more than a year earlier. In mid-1945 the total was about 46,800, and the

present number of employees compares with 53,000 in mid-1939. Unemployment in the industry amounts to no more than 279 persons in Great Britain. Indeed, it is probable that many more workers could be absorbed if they were available, and if a steady and adequate flow of materials and accessories could be assured.

* * * *

Overseas Railway Traffics

After some variable results in the opening weeks of the current financial year, traffics of the principal Argentine railways have shown consistent improvement in the past fortnight. Receipts of the Buenos Ayres Great Southern, however, are still ps. 275,000 behind the preceding year, although in the two weeks under review there has been a gain of ps. 552,000. Buenos Ayres Western traffics show a combined advance of ps. 458,000 in the two weeks, and on the Central Argentine the gain has been ps. 576,360. On the Argentine North Eastern, however, the recovery shown elsewhere has not yet set in, and there has been a loss of ps. 72,400 compared with the preceding year, the aggregate figure being ps. 135,600 lower. Entre Rios results, although they have gained ps. 64,000 in the fortnight, are still ps. 50,900 down on the aggregate. Publication of Buenos Ayres & Pacific returns has ceased since the week ended July 19. Some results are compared in the table below:—

	No. of week	Weekly traffic	Inc. or dec.	Aggregate traffic	Inc. or dec.
Buenos Ayres Great Southern*	6	3,355	+ 111	19,721	− 275
Buenos Ayres Western* ...	6	1,347	+ 202	7,689	+ 828
Central Argentine* ...	6	3,412	+ 239	18,639	+ 102
		£	£	£	£
Canadian Pacific	32	1,516,750	+6,650	47,663,500	+3,967,500

* Traffic returns in thousands of pesos

Canadian Pacific receipts for the 32 weeks to August 14 are £3,967,500 higher than in the corresponding period of last year, and in the fortnight ended August 7 showed an advance of £902,000.

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L.N.E.R. Manchester-Sheffield Electrification

Approval has been given by the Minister of Transport for the L.N.E.R. to resume electrification of the main line between Sheffield and Manchester, together with the lines from Barnsley Junction to Wath, and from Fairfield to Trafford Park and Manchester Central, involving a total of 75 route-miles or 300 track-miles. Work on the scheme was in hand before the war, and although it was then suspended, the first of the 1,870-h.p. mixed-traffic electric locomotives for these services was completed at Doncaster and underwent trials in 1941. The locomotive was described and illustrated in our March 7, 1941, issue. Completion of the work will take four years, at a cost of approximately £6 million, but the annual coal saving is estimated at about 100,000 tons. The traffic capacity of Woodhead Tunnel will be increased by 25 per cent. All trains between Manchester and Sheffield will be hauled by electric locomotives, but multiple-unit stock will be used for suburban services between Manchester London Road, Hadfield, and Glossop. The supply will be taken at 1,500V. d.c. from overhead conductors, which is the same system as is being adopted on the L.N.E.R. lines from Liverpool Street and Fenchurch Street to Shenfield; it is found, also, on the Manchester to Altrincham line, where trials of the first electric locomotive have been conducted. The main electric repair shops and running sheds will be situated at Levenshulme, six miles from Manchester, and there will be smaller running sheds at Darnall (near Sheffield) and Wath. The Manchester to Sheffield line carries a dense traffic, and about six out of every ten trains carry coal. Nearly 100 trains in each direction pass daily through the Woodhead Tunnel.

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Accelerating Permanent Way Maintenance

Despite periods of depression and falling railway traffics, such had been the sense of public duty on the four British main-line railways that, at the outbreak of the recent war, the inherent stability of the track was such as to enable it to carry unprecedented war traffics with a minimum of maintenance, and at the same time to earn the admiration of railway engineers throughout the world. Despite this, the years have taken their toll, and the accumulated arrears of maintenance are such as to present a vast problem to the Chief Engineers, with their restricted supplies of labour and materials. Accordingly, there is a particular attraction at the present time in any mechanical device for the purpose of operations which heretofore have been undertaken by hand labour, if the machine shows the likelihood of both relieving the acute shortage of skilled labour and also expediting the process. This week we describe an automatic tamping machine, of Swiss origin, at present on trial on the L.N.E.R., which is capable of tamping a sleeper in about 15 sec., and thus could handle a 60-ft. length of track in 6 min. This machine has already proved its worth on the European Continent and in the U.S.A., under very different conditions from those prevailing in our own country, but the trials now in progress should demonstrate whether the machine has a useful sphere of work here. It tamps the sleeper to an extent of about 15 in. on each side of the rail, which is in accordance with the usual British practice. On the Continent the machine is generally operated by permanent way maintenance contractors, whereas the practice of maintaining track by contract is very unusual in this country.

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Practical Lessons on Caisson Sinking

It is refreshing as well as illuminating to read the frank and critical account, contained in an article in this issue, of the caisson sinking at the Baton Rouge bridge over the Mississippi river. No attempt is made to conceal the imperfections of the methods adopted in connection with the artificial islands and in facilitating the sinking. For those without practical experience of successfully-established practice in caisson and well sinking, the article contains many useful hints. Its principal conclusions are:—

(1) That the sand islands by appreciably lessening the cross-section of the river—which even at low water was deep and had a current of some 4 ft. per sec.—invited serious scour and were dangerous;

(2) that caissons should always be designed so that they can be weighted to aid sinking;

(3) that water-jet lubrication round a caisson is a potential danger to sinking in sand and of no great value in clay; and

(4) that the use of explosives to break friction is a method of desperation which is seldom effective and causes sand "blows."

Observations showed that fine sand offered much more frictional resistance to caisson sinking than clay or clay and sand.

* * * *

Main-Line Diesel-Electrics for Southern Railway

In November last, Sir Eustace Missenden, General Manager of the Southern Railway, announced the approval of the board of that company to large-scale plans for the adoption of diesel-electric traction for use in connection with subsidiary lines in Southern Railway electrified areas. He also stated that conversations were to take place with manufacturers on the design of a main-line diesel-electric locomotive for use on the Western Section. It is now announced that the Southern Railway has ordered three express diesel-electric locomotives for main-line passenger express services. Construction will be undertaken at Brighton works, and it is hoped that the locomotives will be in service towards the end of next year on the West of England route between Waterloo, Exeter, and Plymouth. Each locomotive will have a 1,600-h.p. diesel-electric engine generator; the diesel equipment is being produced by the English Electric Co. Ltd. The units are designed so that they may be worked coupled to haul the heaviest trains. Some details and an artist's impression of the locomotives are given elsewhere in this issue.

* * * *

L.M.S.R. Experiments with Roller Bearings

Among the most interesting items connected with the locomotive building programme recently announced by the L.M.S.R. is a comprehensive investigation into the advantages to be gained by using roller bearings. These experiments are all the more valuable because of the comparatively large number of engines involved, and also because they will enable fair comparisons to be made of the effects of another—possibly significant—factor in future construction, namely, steam distribution by Caprotti valves. As described in a news article in this issue, 22 out of 150 new locomotives are to have roller

bearings; two of these are Pacifics, and the others are Class "5" 4-6-0s. Of the latter, 10 will have Walschaerts valve gear and 10 Caprotti valve gear. In addition, 10 other Class "5" 4-6-0s are to have Caprotti gear and plain bearings, so that it will be possible for any gains due to the roller bearings, as well as those due to the Caprotti valves, to be analysed in detail. The two Pacifics will have roller bearings to all axles of both engine and tender, to be supplied by the Skefko Ball Bearing Co. Ltd. and by British Timken Limited; the latter firm also is supplying the roller bearings for the 20 4-6-0s. Caprotti valve gear is to be supplied by the Associated Locomotive Equipment Co. Ltd. The high performance given by roller bearings on the L.M.S.R. turbine locomotive suggests that if costs can be kept sufficiently low, the use of such bearings might be extended with advantage.

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"The Economist" on the Transport Commission

Commenting on the choice of members for the Transport Commission, *The Economist* observed in its August 16 issue: "It is no disrespect to the other members to say that the main burden of the Commission will fall on Sir Cyril Hurcomb and Sir William Wood. No better example of the virtues of the British Civil Servant could be found than Sir Cyril, who is one of the very select few who excite the admiration of all who see them at work. Sir William Wood has risen to the top of the largest railway company in the country; he is a man of great energy, quickness and determination. But the supreme importance to the new structure of transport of the personnel of the Commission requires something more to be said. Both Sir Cyril and Sir William are consummate administrators, tireless in the pursuit of detail and assiduous in attendance at committees. But the Commission's job is not to administer anything; it is to think out what is meant by the co-ordination of transport, to determine how the nation can get a better transport service at lower real cost, and to impose the results of this reflection on the executives. Or, again, the whole *rationale* of the Transport Act is that there is something new to be done to transport, something that is not being done now. But Sir Cyril represents Things As They Are on one side of the fence that separates government from industry, and Sir William represents Things As They Are on the other side of the fence. All in all, Mr. Barnes's appointments are so "safe," they reflect such an obvious determination not to upset anything, that one wonders more than ever what the Government thought it was accomplishing by its Act."

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Rail Transport in Nigeria

THE report* of the mission appointed to inquire into the production and transport of vegetable oils and oilseeds produced in the West African Colonies has now been published by the Secretary of State for the Colonies. The composition of the mission was Dr. B. A. Keen, D.Sc., F.R.S. (Chairman), Mr. C. E. Rooke, C.M.G., M.Inst.T., Mr. J. McFayden, J.P., with Mr. R. S. Mallinson of the Nigerian Administrative Service as Secretary. The mission stayed 31 days in Nigeria, and brief visits were paid to the Gold Coast, Sierra Leone, and Gambia. To cover a wide field of inquiry in the short time available, Mr. Rooke left the other members of the mission for part of the time in Nigeria so as to give detailed attention to the transport problems of that Colony, and a considerable section of the report deals with transport. Mr. Rooke also had a short note incorporated in the main report in which he drew attention to certain particular aspects of transport matters. Mr. Rooke had intimate knowledge of the Nigerian Railway, for he entered its service in 1937 as Chief Traffic Superintendent, and in 1942 was appointed General Manager, a position he held for two years until his retirement. His recent death was recorded in our August 1 issue.

The report now issued points out that, whatever the number of locomotives and wagons in stock, the key to efficiency is the percentage off duty, either under repair in shops, waiting to go into shops, or stood by for running repairs. At the outbreak of the war, the European staff of the Nigerian Railway was 326 or a little less, and there were some 18,000 Africans. In 1940, European staff was reduced by releases to 296, and there were some 20,000 Africans. At the time the report was drawn up, the European staff was 286, the lowest since the railway was built, against an establishment of 354, and traffic was the highest in the history of the railway. The gravity of being under-staffed to this extent could not be over emphasised. New suitable men were extremely difficult to obtain, particularly civil engineers, who were not attracted by the scales of salary offered, which were the same as pre-war. The most acute position is stated to be in respect of civil engineering, mechanical, and traffic operations, where there are 68 vacancies, 44 of which urgently require filling. The mechanical engineering staff is in nearly as bad a state. The solution in the report to this problem is that salaries that would attract the right men should be offered.

Before the war the railway was able to handle nearly 2,000 tons a day of ground nuts over some 700 miles; the actual maximum was 59,000 tons in one month. By concentrating all available stock and "peaking" ground nuts in the months of November to April, and by various other means, the railway was able to handle a maximum traffic of some 1,200,000 tons a year. The railway was equipped for this, and by a further flattening of peaks and a moderate addition to locomotives and wagons, it was estimated that some 1,480,000 tons could be handled. Similarly, in engine-miles some 5¼ million were envisaged, provided that the percentage of "sick" locomotives could be kept to the 18-20 per cent. mark, and wagons under 10 per cent. With results of production drives and various changing military necessities, there was a formidable increase in volume and a changed directional flow in the length of haul. Traffic density, which had varied between a low level of some 41,000 tons a month and a high level of 110,000, changed first to a low of 89,000 and a high of 135,000, and is now in the neighbourhood of 100,000 low and 120,000 high, with the added complication of almost balanced two-way loading slowing down wagon turn-round and reducing wagon availability. The result has been that the railway has had to overwork its plant to cope with the traffic and has far exceeded its own estimates of what it could do. The following figures are given:—

TONNAGE AND ENGINE-MILEAGE

Year	Tons hauled	Engine-miles run
1937–38	1,200,920	5,183,173
1939–40	914,313	4,628,694
1940–41	1,038,963	4,752,940
1941–42	1,308,261	5,575,913
1942–43	1,500,143	6,012,516
1943–44	1,635,701	7,041,759
1944–45	1,709,690	7,076,660
1945–46	1,424,843	5,505,887
1946–47	1,650,000	6,250,000

The arrears of repairs to locomotives are mounting steadily, and mileage between service repairs has been increased from 40,000 miles to 60,000 miles nominally; in one instance one locomotive has done 127,000 miles. There are still some 45 locomotives in service which have passed stipulated mileage for service and/or general repairs. The average mileage per locomotive-day in service has increased to the very high average of 150 miles a day. Some locomotives are doing as much as 210 miles a day. Of a stock of 191 main-line locomotives, 36, or 18·8 per cent., are in shops or waiting to go in. Ten, or 5·23 per cent., were under periodical examination, and 18, or 9·4 per cent., stood off in service. That gives a total of 64, or 33·5 per cent. out of action, and leaves only 127 locomotives to handle the greatly increased traffic. At the best it is concluded that by 1947-48 there will be 97 locomotives due for heavy repairs, and 59 due for service repairs.

The remedy suggested is that there should be a prompt supply of spare parts, materials, and European staff. The erecting shops should be extended and the running shed at Ebute Metta should be enlarged. It has been suggested that spare parts should be made locally, but the report points out that the workshops were built as repair shops and not manufacturing establishments.

The present position in regard to the actual number of wagons in service is good, but it seems likely that the position will deteriorate. There are now 34 new locomotives on order which will give some increased locomotive power temporarily, but by 1951-52, 17 new Vulcan 2-8-2, and six new passenger locomotives will be required on replacements from renewals. In view of the steady general increase in traffic it appears desir-

* Colonial No. 211. His Majesty's Stationery Office. Price 1s. 3d.

able, it is suggested, to order new locomotives at the present time. The same considerations apply in the case of wagons.

The general summary in respect of the railway and its services given in the report is that there is ample line capacity adequately to cope with any increases of traffic likely to arise from oilseeds, but the railway is short of the means to use it because it has been, and is being, starved for men and materials. If the railway is given the men and materials, and the means, it will be able steadily to catch up and strengthen its position.

* * * *

The Structure of Indian Railway Organisation

THE Transport Bill now having received the Royal Assent and the personnel of the Railway Commission having been announced by the Minister of Transport, makes the subject of how the railway organisation is to be set up of great interest to the railway staff and industrial and economic interests of this country. It is not out of place, therefore, to review the value of experience gained in other parts of the world where nationalisation has been gradually brought about, and the methods adopted to secure, under their own conditions, a reasonable standard of efficiency and development.

The Indian Government Railways, grouped together, probably are one of the largest systems in the world under one railway authority. To those who have not followed the history of the development of the Indian railways it is, perhaps, surprising that over the course of some decades the re-orientation of the organisation has been somewhat conservative. From time to time the problems have become difficult and the railways have become involved in the repercussions of economic depression and of political pressure. Commissions have been set up to report on the organisation from various angles, and to consider the relative advantages of systems in force in other continents, both financial and administrative, having in mind the special circumstances of India and the methods of management. Consequently, the recommendations of these committees, particularly that of the Acworth Committee of 1921, which consisted of railway experts and persons with industrial and political interests, and the Wedgwood Committee of 1936 which consisted entirely of railway experts, have had their repercussions in the set-up of the Indian railway organisations as they now exist.

Evolution of Control

The Indian railways were mainly constructed by private enterprise under a State guarantee and with statutory rights of State purchase. By 1945, Indian railways were almost completely India-controlled. Two big lines came under direct State control during the first world war, and in 1923 the East Indian and Great Indian Peninsula companies passed from company to State control. During the second world war the six remaining Indian systems, with a mileage of 16,354, passed into Government control, making a total of 33,228 miles. The sterling credit balance accumulated between 1939 and 1944 made the later purchases possible.

Until 1924, railway finance was an integral part of State finance, and profits and losses were included in the general revenue account. In 1924, after the report of the Acworth Committee, railway finance was separated from general finance. Depreciation and reserve funds were created, and it was also agreed that the railways should make an annual contribution to the general revenues of the State of 1 per cent. on their capital. For a time the Indian railways contributed £5,000,000 a year to the central Government revenue.

Altogether, about £600 million was spent on Indian railways. When the war started, the Indian railways had just pulled through a very severe period of depression: they were in debt to the extent of about £60,000,000, but it had been possible to discharge this debt because of the very heavy traffic of the war and also to save a substantial sum to be used for the rehabilitation of the railways and to meet unanticipated needs in the future. Subsequently, surplus revenue has been adjusted in the light of the economic background of the country. The individual identity of the railways has been retained, the General Manager having wide powers and being responsible for day-to-day efficiency of his administration. In fact, little change has been made, and the railways are managed much in the same way as they have been for several decades, switches from control by boards representing private enterprise to a central railway authority having been relatively slow and cautious.

Class 1 Railways

The railways are graded in India to Classes 1, 2, and 3, and for purposes of reference we are referring only to the Class 1. They are as follow:—

Bengal & Assam Railway.
Bengal-Nagpur Railway.
Bombay, Baroda & Central India Railway.
East Indian Railway.
Great Indian Peninsula Railway.
Madras & Southern Mahratta Railway.
North Western Railway.
Oudh Tirhut Railway.
South Indian Railway.

The aggregate mileage of these railways, which are now controlled under the Indian Government Railway Board, is nearly 34,000 miles; the largest is the North Western Railway, which has over 6,700 miles. Two other Class 1 railways, the Nizam's State Railway and the Mysore State Railway, having some 2,500 miles, are for statutory purposes under the Government of India Act, 1935, but for the purposes of financial and administrative control are run entirely under their own railway and Government authority. It will be seen, therefore, that the magnitude of this undertaking is of importance, and is worthy of a study when considering the method of organisation to be set up in the United Kingdom.

It would appear from recent information from India that the break-up necessary on the division of India into two Dominions will alter the grouping of two or three of these railways, but that the identity of groups of each individual railway will be retained, and that the present method of administration, controlled by individual General Managers with a Railway Board as the supreme authority in the new India and a similar organisation for Pakistan, will be set up. No doubt the value gained from the wide field of experience left behind by expert railwaymen in India continues to have great influence on the present method of control.

It is more than incidental to mention that the Indian railways during the two wars have played a great part, and a very difficult one indeed, in the effective prosecution of the wars and in bringing these to a successful termination; throughout they were called on to carry considerable increase of traffic with no increase of stock—in fact, most were called on to hand over power, wagons, and equipment to neighbouring countries at a time when they could ill afford to do so. Throughout these periods the General Managers, with their executive departmental heads, achieved magnificent results under extraordinarily difficult conditions, and it is doubtful whether a heavy central organisation with a divisional zoning arrangement could have given the same measure of success.

The Indian Government Railway Board consists of the Chief Commissioner, Finance Commissioner, and four members, all full-time officers. There are also directors in charge of Civil and Mechanical Engineering, Finance, Traffic, Establishment, Railway Stores, and Projects, supported by their technical Staff. The Chief Commissioner is also *ex officio* Secretary to the Government. The Board has under it a Central Standards Office with a Controller who is responsible to the Chief Commissioner for standardisation of rolling stock and equipment.

Indian Government Railway Board

The Indian Government Railway Board is now responsible to the Government of India for the administration of the railways, and for financial control on proposals put forward by their General Managers. Budgets are drawn up by each administration and submitted to the Board, where they have a detailed scrutiny by the Board's technical and financial officers and directors. Budgetary meetings are held with the Chief and Financial Commissioners. Subsequently, these budgets are put before the Finance Committee of the Legislative Assembly for study and criticism before they are passed by the Government. On these budgets a comprehensive estimate is made up of major expenditure and revenue. Having the budgets approved by Government, the General Managers of the individual railways have wide powers for the day-to-day administration and the carrying out of the new works projects. Each railway administration issues its own annual report, maintains is own

statistics, and by a careful examination of day-to-day working of other railways is able to create that very desirable spirit of healthy competition with other railway administrations under the Authority and working under similar conditions.

In the General Manager's annual report it is customary to compare the technical and statistical information relating to power, wagon and coach usage, costs of maintenance of rolling stock, and the many other valuable day-to-day statistics relating to railway working. These are made readily available to other railways, and enable the General Managers and the Railway Board authority to compare these statistics from time to time, and particularly in the annual reports of individual railways running under similar conditions of service. It is contended that the value of this comparative examination has been of great assistance in maintaining the standard of efficiency, and has enabled the Indian Government Railway Board authority to relate the standards of efficiency maintained by these chief railway administrators. In recent years standardisation has had much attention by the central authority, which is as it should be; this has received much assistance from the Indian Railway Conference Association's technical committee work.

The constitution and function of the Indian Railway Conference Association follow closely those of the American Railroad Association, and it is ostensibly separate from the Railway Authority, although unofficially sponsored by them. It keeps in close touch with its work, but essentially the Association is an inter-railway one in its scope, and has as its object the improvement of operation and standardisation of rolling stock and equipment and also the general co-ordination of methods of operation of all Indian railways. General conferences of this Association are held twice a year, and are attended by General Managers, and their senior operating and technical officers of all railways large and small. The half-yearly sessions are also attended by the Railway Board authority and the Minister responsible for transport.

The technical and special committees of the Association are held from time to time at convenient centres throughout India. They have sections of electrical, engineering, mechanical, medical and personnel, stores, etc., each dealing in an advisory capacity with subjects relating to its particular sphere of railway activity. The reports of these technical committees show how valuable they must be to the Standardisation Controller. There are also four committees of Audit, Commercial, Operating Broad-Gauge, and Operating Metre-Gauge, which deal with rules for the interchange of traffic concerning their departments. The Association has a permanent General Secretary and staff. They compile and issue the coaching and traffic tariffs and all other rules dealing with the interchange of traffic, train examiners, military traffic, etc., and general co-ordination of all railways, every branch of railway work, and effect the pooling of ideas and resources throughout the country.

The Conference Association is also responsible for the pooling of nearly 300,000 wagons, the General Secretary of the Conference being the Director responsible. He regulates the movement and distribution of goods stock with the object of ensuring that stock is distributed to the best advantage throughout India. He has control of staff of about 500 men stationed at 13 principal interchange junctions for the purposes of examination of goods stock and arranging for its interchange as expeditiously and in as good condition as possible. Higher charges are raised against railways having stock in excess of the authorised holding, and bill repairs and penalties in accordance with Conference Association regulations. This Railway Conference Association has played a most important and effective part in the working of the Indian railways, and although a school of thought recently has been feeling that this Association might be taken over by the Government, it has been considered advisable to retain its neutral authority in the general interests of efficiency.

The half-yearly sessions of this Conference Association show by their reports the value of railway administrators and technical officers being able to voice their opinions independently and frankly, which has made for a betterment of the overall efficiency. It is worthy of note that the Indian State Railways have played no little part in these Conference Association meetings. As they are administered by their own and independent administrations they are able at the half-yearly sessions and in committee work, to ventilate their opinion quite independent of the central railway authority.

The establishment and staff problems to cope with nearly one million personnel are, with the many racial problems in a sub-continent such as India, naturally very formidable. The policy to date has been that the Railway Board Establishment Member deals with the officer class and decides promotion and location of this class of staff. Normally, officers are trained and brought up in the individual railways, and usually transfers from one railway administration to another are only made at the higher level. The General Managers are appointed usually on a five years tenure largely on their success as departmental officers, and in recent years they have been appointed irrespective of the railway on which they had spent most of their time. The officers from the Railway Board are selected from those officers who have proved to be successful men in their individual administrations, and from those officers who have shown particular energy and technical ability in the various committees set up by the Indian Railway Conference Association. The General Managers naturally are consulted with regard to these transfers.

The senior subordinate and general staff are recruited and dealt with by the individual railway administrations, each of whom has a senior officer for staff and welfare with its own labour organisation. At the present moment the identity of each railway is kept by such indications as uniform, etc., but the general standards of pay are now so regulated that they are on an all-India basis, with special allowances for large cities, urban and rural districts.

The inestimable value of the *esprit de corps* which has been built up by generations of individual administrators and staff is being maintained, and at present serves the important purpose of creating a team spirit, promoting healthy and enthusiastic competition which admittedly assists administrators materially to improve day-to-day efficiency.

Partition of Railways

It has been recorded recently, in view of the division of India into two Dominions, that the necessity has arisen of altering the zones of certain railways, and no doubt the separate administrations have made this problem much more easy. Most of the old companies' names will still presist, for, together with their distinctive colouring of rolling stock and their individual characters, much is gained and a great deal lost by any alterations to the present groupings. It might be explained that whilst wagons are pooled for the whole of the Indian railways under the pooling system already explained, and coaching stock run through mostly on express trains from one capital to another, locomotives are kept to their terminals within the limits of the fixed boundaries of each administration. Running sheds and main repair workshops are so situated as to provide for a sensible turn-round within each area.

At the moment, the two first-class Indian State railways are administered separately by their own organisations, the Nizam's railways having their own Railway Board. Whilst the State railways generally co-operate with the Indian Government Railway Board in matters pertaining to operation, they retain their separate identity and finance their own projects, retaining surplus revenues for their own State.

This article touches only very lightly on the background of a railway administration which has been through the throes of nationalisation problems, but it does indicate the importance of retaining the identity and the original structure in which generations of railway administrators have played a great part. The experience of many able administrators brought to bear on the build-up of one of the largest transport organisations in the world is of inestimable value at this time, when we have handed over to India all the responsibilities which this country has shouldered during the last century and a half. We might well be proud of what railway administrators have left behind them in India, not the smallest being the individual character and identity in each separate railway administration, and it would be wise not to ignore the advantages of this arrangement when the structure for British railways under nationalisation is being considered.

It may be that the retention of the system of management of individual railways with their original orientation instituted under companies' boards has to a great extent avoided many of the pitfalls which may have followed complete nationalisation directed from a necessarily heavy organisation of a central railway authority.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Train Service to East Dorset

90, Saxonhurst Road, Ensbury Park,
Bournemouth. July 28

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your comment at the foot of Mr. Palmer's letter under the above heading in your July 25 issue ends by quoting the evening train service from Waterloo to Bournemouth.

I would point out, however, that although Bournemouth has suffered considerable inconvenience by the cancellation of the 6.30 p.m. from Waterloo, the Dorset towns of Poole, Wareham, Swanage, Dorchester, and Weymouth have suffered to a greater degree. The 7.30 p.m. from Waterloo has a connection as far as Poole only, and, as Mr. Palmer mentioned, compared with the 6.30 p.m., passengers for Dorset leaving London by the 5.30 p.m. start an hour earlier, wait at Bournemouth from 8.31 p.m. to 9.18 p.m., and arrive, in the case of Weymouth, 44 min. later.

It would appear that the lot of the Dorset towns could have been eased at least to the extent of advancing the departure of the 9.18 p.m. for Bournemouth to 8.50 p.m., with a corresponding alteration in the Swanage branch train from Wareham.

Another point in connection with the cancellation of the 6.30 p.m. from Waterloo is that, although the train may have been lightly loaded on other nights of the week, no one will deny that it was very heavily loaded on Friday nights. At present, the 5.30 p.m. and 7.30 p.m. departures from Waterloo are being duplicated on Fridays; the relief to the 7.30 p.m., leaving Waterloo at 7.20 p.m., and calling at the principal stations only, arrives in Bournemouth an hour before the advertised arrival of the 7.30 p.m. Neither of these duplications offers any advantage to passengers for Dorset, and I think that the running of the 6.30 p.m. as an advertised train on Fridays only, in place of one of the duplications, would restore a large amount of public goodwill.

Yours faithfully,
GEO. PUNTIS

Inadequate Cross-Country Connections

27, Nether Edge Road,
Sheffield, 7. July 21

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Now that the passenger services on our railways have been forced to suffer a reduction of 10 per cent., surely the time has arrived when the structure and arrangements of our train services should be examined carefully and overhauled in order to give the best services possible in the present circumstances. I refer in particular to cross-country services now prevailing rather than those radiating from London; and although my remarks may appear to be directed against the London & North Eastern Railway, the general principle underlying them could be directed against the other main-line companies as well; no doubt your readers could supply you with examples.

For instance, apart from the summer season special holiday services on Saturdays only, the train services between Manchester, Sheffield, and the Eastern Counties, either *via* Lincoln or Peterborough, leave much to be desired. The connection to Sheffield and Manchester off the 9.45 a.m. *ex* Lowestoft can be made only *via* Doncaster after a lengthy wait there. I am quite prepared to admit that the express services over the G.N. and G.E. joint line are back to pre-war frequency; but is not this the time, when there is little prospect of improved frequency, to overhaul such arrangements as this?

Again, at Peterborough one is forced to notice the parochial nature of the services for the north and the east—the relics of G.N. and G.E. independence, which was supposed to terminate with the amalgamation in 1923, but is still painfully with us. Perhaps I may be permitted to misquote Kipling and say:—

> " East is East and North is North,
> And seldom the twain shall meet."

Or again, at Nottingham Victoria, this disease is prevalent even after twenty odd years of grouping. The connections from the G.C. section to the south, to the G.N. section to the east, and *vice versa*, are rather of the " hit and miss " variety, and some of them are very near misses.

It is also rather unfortunate that the timetables do not show the difference between through trains and through coaches. It is rather disconcerting to search the length of a train for through coaches to some place, and then find that the whole train is going there. Please, Mr. Bradshaw, give us " T.T." as well as " T.C." The practice of showing through coaches should be carried further. For instance, the 7.30 a.m. Nottingham to Grantham (now suspended) was actually through to Kings Cross, but it did not appear in the tables as such. Also, it is rather annoying when, on occasion, after alighting from a Nottingnam train at Grantham, and inquiring for the train to Boston, one is told that it is the same train and has to climb back in again, just because the timetables do not tell us.

Yours faithfully,
D. J. WORRALL

High-Capacity Wagons

Eynesbury,
St. Neots. August 8

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In the article on high-capacity wagons, published in your issue of August 8, the author commits a common misinterpretation of wagon loads, through not discriminating sufficiently between the different classes of traffic—minerals, heavy goods, and light goods.

In illustration, it has been said that the U.S.A. railways, unlike the British, are organised for traffics in very large lots, carried on long hauls. Their average carload in 1938 was 32 tons, and average haul 351 miles, while the British average wagon-load was only 7¼ tons, with an average haul of 59 miles.

In both countries, however, nearly 90 per cent. of the tonnage consists of minerals and heavy goods—coal, iron ore, limestone, roadstone, iron and steel, bricks, sugar-beet, potatoes, grain, etc.—practically all despatched in " very large lots," " bulk loads," or train-loads.

In the U.S.A. these traffics are carried in, say, a 50-ton wagon, while the British railways use five 10-ton wagons! The length of haul makes no difference. Why use five 10-ton wagons, instead of one 50-tonner, to carry traffic a few miles? It is, thus, quite impossible for the British railways to improve much on their present wagon loadings (let alone approach the American average of 32 tons) while the carrying capacity of the wagons averages under 12 tons. In comparatively recent years, British average wagon and train-loads have been slightly rising through slightly increasing the size of wagons from 10 to 12 tons. The average load of coal carried in 10-ton wagons was about 9½ tons. But if 20-ton wagons were used, the average load would be 19½ tons, or 49½ tons in a 50-tonner. This is the way to increase wagon-loads.

Less-than-carload traffic in both countries forms only a small proportion of the total tonnage. The misunderstandings in regard to it simply originate from the British railwayman having no experience of the different methods employed in loading and carrying it in large wagons to small stations, etc. Such consignments are just as numerous abroad as they are in England. Indeed, the writer has often known even small bottles of medicine loaded into a heavy train of high-capacity wagons for little country villages—which may not have a doctor, chemist, butcher, baker, etc., within 10 or 20 miles!

Yours faithfully,
E. R. B. ROBERTS

Inner Circle Service

London Passenger Transport Board,
55, Broadway, Westminster,
London, S.W.1. August 14

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I have read with interest the letter by your correspondent, Mr. L. P. Walter, in your July 18 issue, regarding service on the Inner Circle and seating accommodation at Praed Street Station.

There are five seats on platforms at this station, providing seating accommodation on the normal scale. The service on the Inner Circle is 7½ min. Your correspondent's statement that the interval " varies from 2 min. to 30 min., generally nearer the latter figure," is not supported by official experience. The delay on July 2 referred to by Mr. Walter was very exceptional; a stalled train at Moorgate had to be helped by the following train and then withdrawn. The incident delayed the service 16 min., but it affected the service throughout the peak, and, as signal box records show, there was an interval at Praed Street of 23 min., from 9.11 a.m. to 9.34 a.m.

The train destination indicator on the inner rail platform at Praed Street is hand-worked. The staff is instructed that it shall not be operated until a train is about to enter the station and the destination of the train is verified. This arrangement cannot cause doubt or confusion. The station is under regular surveillance of supervisors, and generally no complaints are made, but the staff has been informed of your correspondent's observations.

Yours faithfully,
J. H. BRERNER,
Chief Public Relations & Publicity Officer

The Scrap Heap

Southey tells me of what must prove a severe frost upon literature—the alarming scarcity of paper; that not more than a six months' consumption is in the nation, and no prospect of procuring the rags from the Continent of which it has ever yet been made. This is *another* mischief added to the countless number of this destructive, this detestable, war.—*Anna Seward to Sir Walter Scott, April* 25, 1808.

* * *

100 YEARS AGO

From THE RAILWAY TIMES, *Aug.* 21, 1847

LONDON and NORTH-WESTERN RAILWAY.—MERCHANDISE DEPARTMENT.—The public is respectfully requested to take NOTICE, that the Company has undertaken the Carriage and the Collection and Delivery of GOODS in LONDON, and at all the undermentioned stations on their line, viz.:—

London.	Crick.	Chester.
Harrow.	Rugby.	Rookery Bridge.
Watford.	Brandon.	Sandbach.
King's Langley.	Coventry.	Holmes Chapel.
Boxmore.	Kenilworth.	Chelford.
Berkhampstead.	Leamington.	Alderly.
Tring.	Warwick.	Wilmslow.
Aylesbury.	Birmingham.	Handforth.
Leighton.	Walsalll	Macclesfied.
Bedford.	Darlaston.	Stockport.
Wolverton.	Willenhall.	Manchester.
Blisworth.	Wolverhampton.	Hartford.
Northampton.	Stafford.	Warrington.
Wellingbro'	Whitmore, for the	Bolton.
Higham Ferrars.	Staffordshire Pot-	Preston.
Thrapston.	teries, and	Wigan.
Oundle.	Newcastle.	Parkside.
Wansford.	Crewe.	Rainhill.
Peterborough.	Beeston.	Liverpool.
Weedon.		

Goods also forwarded to and received from all other parts of the kingdom.

Every information may be obtained on application to—

Mr. B. POOLE, Liverpool.
Mr. S. SALT, Manchester.
Mr. S. EBORALL, Birmingham.
Mr. T. C. MILLS, London.
And to the Company's Agents,

CHAPLIN & HORNE, or PICKFORD & CO.,

Hansbro' Wharf, Thames-st.	Castle, Wood-st., Cheapside.
Cross Keys, Wood-street.	Union Hall, Union-street, Borough.
Swan Two Necks, Gresham-street.	158, Regent-street.
Spread Eagle, Gracechurch-st	395, Oxford-street.
Bolt in Tun, Fleet-street.	Railway Station, Camden Town.
George and Blue Boar, Holborn.	34, Surrey-place, Old Kent-road, opposite the Bricklayers' Arms station,
Universal Office, Regent's-circus.	
Green Man and Still, Oxford-street.	
Golden Cross, Charing-cross, and Camden station.	

By order,
MARK HUISH.

General Manager's office, Euston station, August 14, 1847.

Complete series of three Danish postage stamps depicting stages in the development of the railways, issued to commemorate the Danish railway centenary in June, 1947

M.P.'s SALARIES

In the House of Commons on August 12, Mr. L. D. Gammans, Hornsey—C., asked the Prime Minister if, in view of the further hardships which would be imposed on the British people by the Government's austerity measures, he proposed to recommend a reduction in the salaries of Ministers and Members of Parliament.

The Prime Minister: No, sir.

Mr. Gammans: Is the Prime Minister aware that what this country needs today is not exhortation but example; and if I am prepared to suffer a 10 per cent. or 20 per cent. cut in my salary, as a gesture, will Members of the Cabinet do the same?

The Prime Minister: I have said that in my view there should be equality of sacrifice. I think Members of Parliament do valuable work, and I do not think it is right to single them out.

* * *

BACK TO NEST

The man who went from a cottage to a palace now returns to the cottage.

Sir Frederick Burrows, the railway porter who became President of the National Union of Railwaymen, used to live in a six-roomed cottage named "Thrush Nest" at Ross-on-Wye, where he worked as a railway checker.

Two years ago, when appointed Governor of Bengal, he went to live at Government House, Calcutta, one of the biggest palaces of the British Commonwealth.

He has had, and handled efficiently, one of the toughest jobs in India. But now that power in India is being transferred, Sir Frederick, I hear, will retire and return to Ross: his retirement is not yet official. —"*Chanticleer*" *in the* "*Daily Herald*."

* * *

SOME RAILWAY MEMOIRS—2
By Sir Sam Fay

In the days of the Manchester, Sheffield & Lincolnshire Railway, the Great Central's predecessor, the Directors were in the habit of sending a turkey to each stationmaster at Christmas. One old stationmaster acknowledged his turkey in due form: "Re turkey duly received. Please note this was a goose." . . .

Stockbridge was my next destination. The stationmaster was a well-known character in the district. Stationmasters as a rule are proper persons. David Worsley was by no means a proper person. He drank hard. His possession of a revolver was a menace to his neighbours. Sometimes he let fly at the fence on the opposite side of the platform; then turned to a fire in the porters' room grate which he tried to put out by repeated shots. He had a very large head, which gave a yokel on the over bridge an excuse for yelling, "Yah, you've got to grease your head to get your shirt on." . . .

Through the good offices of Mr. Charles Scotter, the General Manager, I was offered the post of Secretary and General Manager of the Midland & South Western Junction Railway.

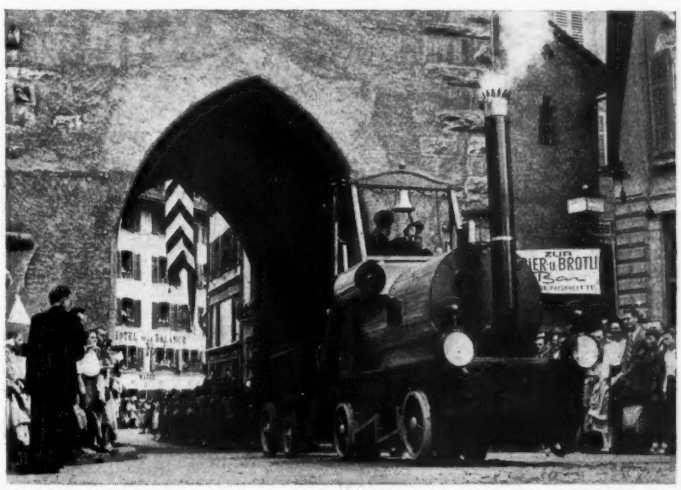
The railway was in Receivership, a Colonel Grey being the Receiver, with five per cent. upon the gross receipts. Shortly after my appointment I managed to get rid of him and was myself given the Receivership.

I had also to remove the Company's Auditor. He was a draper's accountant and knew nothing about railway accounts. He refused to sign the yearly balance sheet. I told him the figures were mine, not his. Eventually, after a stormy interview, I had the satisfaction of telling him to go to the devil and stay there. The last I saw of him was a little red-faced man gesticulating and perspiring at the head of his office stairs.

The condition of the line was deplorable. It was laid with flat-bottomed rails bolted on to the rotten sleepers. Had the rails been of the bull-head type they would probably have collapsed under traffic. Fencing was decayed or gone. At some of the level crossings gates still remained. The notice "Shut this gate" appeared, although the fence on either side had disappeared.

Locomotive engines were in the same category. I saw an exasperated engine driver kick the boiler of his engine because he could not get it to move.

The first week I was there we had to wait for the day's takings before we could pay the men. . . .



Reproduction of an early steam locomotive in the transport pageant which formed part of the Swiss railway centenary celebrations at Baden on August 9 (*see page* 219)

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

WESTERN AUSTRALIA

Railways Operate Refreshment Services

Although all other Government railway systems on the Australian mainland have operated their refreshment services departmentally for many years, the Western Australian Government Railways hitherto have adopted the policy of leasing such services, including refreshment rooms, dining cars, and bookstalls, to private interests. While in many cases the lessees rendered excellent service, in others the service left something to be desired, and there has in consequence been a demand for improvement in some quarters. During 1945 the Government decided that it would be in the best interests of the department if the refreshment services were operated departmentally, and the Commissioner was requested to implement this decision.

An organisation was formed accordingly, under the control of the Secretary for Railways, and the gradual taking over of rooms, and dining cars, has been proceeding since September 16, 1946. In addition to many refreshment rooms, the dining cars between Perth and Kalgoorlie are operated already by the department. To assist in inaugurating the new section, an officer of the Queensland Government Railways was loaned to Western Australia for several months.

A problem confronting the department, of labour and building materials, was the provision of suitable accommodation for the Refreshment Service Section. A cafeteria previously operated for munition workers at Welshpool, about 4 miles from Perth, became available for leasing, and these premises were taken over and are being used as a main depot for supplying the requirements of departmental refreshment rooms generally, in addition to operating a cafeteria for the use of industrial establishments in the neighbourhood.

New Dining and Kitchen Cars

The department has in hand the construction of two new dining cars and two kitchen cars for use on the "Westland" express (the Western Australian section of the interstate passenger service between Perth and the Eastern states). The dining car will seat approximately 60 persons, and cooking will be done in the adjacent kitchen car. In the meantime, the existing 24-seat dining cars, of which there are five in traffic, are being altered and renovated. The first car to be dealt with was altered to provide seating accommodation for 32 passengers, and has been in use on the Perth-Northam journey return run since the date of taking over the dining car service.

Two other cars have been altered since to seat 40 passengers, and the kitchens and interiors generally modernised, with new stoves and equipment, stainless-steel linings, and fittings.

Modernised Dining Cars in Western Australia

One of the vehicles rebuilt since the railways took over the dining car services

INDIA

Cord Pulled in Crowded Carriage

A recent court ruling will cause many railway administrations in India to ponder. On June 5 Mr. K. L. Pande, Railway Magistrate, Chindwara, held justifiable the pulling of an alarm chain on account of the overcrowding of a third class compartment. What the repercussions of this decision will be it is hard to foresee. Many years necessarily must pass before overcrowding of third class carriages is eliminated, and the possibilities of the legal use of the communication cord by all and sundry who find themselves short of the statutory seating space will be viewed with alarm in a country where the difficulties in running trains to time already are enormous. The passenger concerned now proposes to proceed against the Chindwara Railway Police for wrongful detention.

Regularising Seat Reservations

The railways have reviewed recently the measures necessary to ensure fair and equal treatment of passengers requiring reserved accommodation. A comprehensive scheme has been drawn up with the object of eliminating irregular practices. Reservation registers and platform charts will be prepared in a more detailed manner, and will be subject to check at regular and frequent intervals by responsible officials. Where circumstances permit, timed and dated certificates will be issued to passengers when accommodation is not available, and waiting lists will be maintained.

If the new procedure is to be fully successful, public co-operation is essential. Passengers are asked to refuse to pay unauthorised charges for reserved accommodation to railway staff or to others, and to report demands for such charges to the station superintendent, stationmaster, or the railway administration wherever possible.

PALESTINE

Financial Position

The financial year ending March 31, 1947, closed with a decrease in the earnings of the Palestine Railways of £P.717,802 as compared with 1945-46. Total earnings for the year were £P.2,312,131, and operations resulted in a deficit of £P.540,738. The net revenue deficit was £P.587,111. This includes the Hedjaz Railway, which accounts for a loss of £P.197,629.

The decrease can be attributed mainly to the falling off in military traffic, and to a certain degree, especially in the case of passenger traffic, to lack of public confidence as a result of sabotage. Road competition also is a serious factor.

Reductions in Staff

As envisaged before the close of the financial year (see *The Railway Gazette* of April 25) serious reductions in staff are necessary to bring establishments to a level commensurate with the present volume of traffic. Schemes for retrenchment on the fairest possible basis have been worked out, and it is estimated that appoximately 800 men will have to be dispensed with, and many others downgraded, when all plans are implemented fully. This is a serious matter in a country where political unrest is present already, and local workers' unions are involved.

Negotiations are in progress between the management and the staff on the subject. Machinery for negotiation, in the form of consultative committees for the more senior staff, and wages conciliation boards for the wages staff, was introduced some time ago and is used fully.

FRANCE

Rise in Railway Rates

The French National Railways (S.N.C.F.) lost no time in raising passenger and freight rates to cover the increase in wages of railwaymen resulting from the recent strike. The new rates were applicable from July 1, and involve an increase of 20 per cent. for passengers and 28 per cent. for freight. Prices of workers' weekly tickets and of the cheap tickets issued for the annual paid holidays will not be raised until December 1. Passenger fares per km. are now: first class, fr. 3.60; second class, fr. 2.34; and third class, fr. 1.80. The third class fare is equivalent at the official exchange rate to slightly less than 1½d. a mile. It is claimed that railway fares are now more in line with those of other European countries.

Proposals for Economies

M. Jules Moch, Minister of Public Works & Transport, has declared that the railways this year should be able to earn

sufficient to balance their budget, or nearly so. But this is a matter of controversy in the French Press. It is estimated that the recent strike has cost the S.N.C.F. fr. 10,000 million, and it is maintained that great reductions in expenditures are required both in staff and equipment. Instead of a reduction of 20,000 in railway staff, as has been proposed, it is suggested that a cut of 80,000 or 100,000 should be made in the total of 500,000. It is pointed out that one half of the railway lines are working at a loss, carrying only 17 per cent. of the total traffic. In addition to reducing staff and closing unprofitable lines, another suggestion is that expenditure in connection with reconstruction plans leaves room for economies.

U.S.S.R.

Southern Trans-Siberian Route

According to a recent message from Barnaul (in south-west Siberia), the building of the new Trans-Siberian railway, which is to connect at Taishet, to the east of Krasnoyarsk, with the existing line, is nearing completion. While the eastern section, from Taishet to Abakan, is still in the earlier stages of construction, work on the other sections, to the west of Abakan, is reported to be well advanced. From Abakan, which is to be its temporary terminus, the line runs westward to Stalinsk, in the Kuznetzk coal region (south of Tomsk); further west, it runs to Barnaul and Slavgorod, where it joins the railway branching from the old Trans-Siberian line at Tatarsk (east of Omsk). The Slavgorod-Pavlodar section of this branch line, some 100 miles long, has been incorporated in the new route.

From Pavlodar the new line continues westward to connect at Akmolinsk with the Kuibyshev-Ufa-Kadaganda main line. The Pavlodar-Akmolinsk section is some 250 miles long, and the whole distance between Abakan and Akmolinsk is approximately 1,000 miles.

Resources of Areas Served

The railway crosses the Kulunda Steppe between Pavlodar and Slavgorod, and reaches its highest point in the saddle of Salairsk, in the northern section of the Altai Mountains, between Barnaul and Stalinsk. Apart from its strategic importance, special emphasis is laid on the part the new railway is intended to play in the development of the regions it traverses, where extensive deposits of magnetite ore, iron ore, coal, lead ore, silver ore, and copper ore are being worked. Barnaul, a town of some 100,000 inhabitants, and Stalinsk, of similar size, have important metallurgical works. Stalinsk, in addition, is one of the great coal mining centres of the Kuznetzk coal region, which ranks first among the great coal regions of the Soviet Union. The route of the new railway was shown in the map of the Asiatic railways of the Soviet Union published in *The Railway Gazette* of May 25, 1945.

POLAND

Output of Railway Workshops

New production in the State Railways workshops for June included 18 standard-gauge and 3 narrow-gauge locomotives, 1,034 high-capacity coal wagons, and 7 passenger coaches. Wagon production is increasing steadily. The pre-war building average was 50 a month, but reached 250 a month in 1946. The monthly average this year is now 834.

The recovery in workshop output since the end of the war has been remarkable, considering the extensive material damage to buildings and the amount of machinery and equipment which had been removed by the Germans. In May the Bydgoszcz shops completed the overhaul of the 1,000th locomotive since the liberation; during this time 30,000 wagons, of which 1,000 were refrigerator vans and 600 tank wagons, were repaired. At the present time these works are being reorganised to deal with overhauls of 100 2-8-0 locomotives due shortly for delivery. The present monthly repair capacity is 35 locomotives, 1,100 wagons, and 33 passenger coaches.

CZECHOSLOVAKIA

Traffic Statistics for First Quarter

According to a recent statement by the Czechoslovak Central Planning Committee, the rolling stock of the State Railways during the first quarter of 1947 was about 36 per cent. below that obtaining in the same period of 1937. Deliveries of locomotives and rolling stock from the Czechoslovak railway industry are proceeding at an increased rate. In the quarter ended March 31 these amounted to the following percentages of the totals envisaged in the Two-Year Plan: locomotives, 18·7 per cent.; wagons, 23·4 per cent.; and carriages, 0·03 per cent.

Goods transport statistics for the first quarter compare with the corresponding period of 1937 as follow: wagons made available to consignors, 73½ per cent.; tonnage of goods conveyed, 95½ per cent.; aggregate distance covered, 114·8 per cent. Despite the depleted stock of coaches now in service, 31 per cent. more passengers were carried during the quarter under review, while the aggregate distance covered exceeded that in the first quarter of 1937 by 56·3 per cent.

Publications Received

A Short History of Mechanical Traction and Travel. Volume 1—Road. By R. W. Kidner. Chislehurst, Kent: The Oakwood Press, 30, White Horse Hill. 7½ in. × 5 in. 138 pp. Illustrated. Price 12s. 6d.—This is the bound version in full cloth of parts one and two of a series of brochures covering both road and rail. It contains 33 photographic illustrations and 303 line sketches. The original brochures appeared during 1946 under the respective titles of "The Early History of the Motorcar, 1769-1897," and "The Development of Road Motors, 1898-1946."

Universal Directory of Railway Officials and Railway Year Book, 1947-1948. London: The Directory Publishing Co. Ltd., 33, Tothill Street, Westminster, S.W.1. 8½ in. x 5½ in. 604 pp. Price 20s. net.—Nationalisation of railways in many parts of the world suggests that the present volume, the 53rd, will be of historical as well as current interest, in recording for the last time details of many famous company administrations in such widely separated countries as Argentina, Colombia, Ecuador, Rhodesia, Spain, Sweden, Switzerland, and also in Great Britain itself. Commercial traffic in most parts of the world has sufficiently resumed its normal flow to have enabled official revised details to have been received from all but a few countries. The Chinese National Railways, for example, have completely recast an entry that has had very little revision during the war years in the East; the Norwegian State Railways have responded in full for the first time since 1936; and from Germany details have been received from both the Reichsbahn and about 50 per cent. of the smaller administrations. Finland is exceptional in having made a return from Eastern Europe; the countries in close association with Soviet Russia appear to have followed the lead of that Power in withholding all replies to inquiries.

Substantial additions and alterations have been made in the statistical section. New or revised tables are included of the development of the world's railway mileage; the principal altitudes on the world's railways (with graphs); extended details of the world's longest railway tunnels; a new section on North American railway tunnels; some outline scale drawings and details of noteworthy railway bridges and viaducts; revised tables of the fastest scheduled runs, and the streamline trains, in the U.S.A.; a new section on oil fuel for locomotives; and post-war details of the preservation of historic locomotives and rolling stock. A new article on the Argentine railway purchase has been included in substitution of the now obsolete details of the Mitre Law. The chronology of railway history has been extended in the earlier years (principally about 100 years ago), and also has been brought up to date. There are many additional entries in the railway bibliography.

These and other changes should combine to make the present volume of particular utility. In its primary function as a directory, it contains in carefully-condensed pages more comprehensive lists of officers and particulars of railways throughout the world than can be obtained from any other publication in any language. This information enables railway officers and others to keep in touch with the personnel on railways in other parts of the world for the exchange of information concerning research and developments in all phases of railway operation and maintenance.

The First Railway in Norfolk. By George Dow. Published by the London & North Eastern Railway. 8½ in. × 5½ in. 32 pp. + folding table. Price 1s. 6d.—This booklet was issued originally in 1944 to commemorate the centenary of opening of the Norfolk Railway, but only a limited edition could be issued in wartime, and the demand for copies far exceeded the supply. The present edition has been amplified and extended, and is well worthy of inclusion, even in collections which contain the first edition.

Brown Boveri Review. Vol. XXXIII, No. 10. October, 1946.—This issue of the *Brown Boveri Review* contains a summary of the various papers which were presented at the works demonstrations held at Baden, Switzerland, in May, 1946. The papers cover a wide range of problems in electrical and mechanical engineering, including recent developments with steam and gas turbines, heat pumps, the stability of parallel operation for high power a.c. transmission over long distances, high-voltage problems with three-phase transmission, air-blast circuit breakers, and long distance d.c. power transmission. Of particular interest to railway engineers are papers dealing with gas-turbine locomotives, and some recent improvements in the design of electric locomotives. Much of this work has been summarised already or referred to in *The Railway Gazette*.

Practical Lessons in Bridge Caisson Sinking

Experience gained "the hard way" in open caisson sinking through artificial sand islands, and notes on frictional resistance, weighted caissons, and water-jet lubrication

DURING the nineteen-thirties, three great bridges were built in the United States, in which foundations for the piers consisted of caissons founded on, and sunk through, artificial sand islands by the open dredging method; the most modern of these was the rail and road bridge over the Mississippi river at Baton Rouge. The bridge was described in the October 3, 1941, issue of *The Railway Gazette*, but the following details may be repeated for ready reference. The overall length is 2·31 miles, and the main spans, which are of cantilever and suspended truss types, are supported by six piers; together they have an aggregate length of 3,326 ft. spanning the main channel. The construction of the foundations for these piers is described by one of the engineers concerned, Mr. E. S. Blaine, in our American contemporary, *Engineering News-Record*. These are some of his main points.

Main pier No. 1 is sited comparatively high on the river bank, and has a circular caisson foundation, which is sunk to a level of only 85 ft. below zero, or low-water level. Piers Nos. 2 to 5, however, are founded on large rectangular caissons, No. 2 being sunk to −183 ft., No. 3 to −157 ft., No. 4 to −181 ft., and No. 5 to −110 ft.; the river-bed materials through which they were sunk are mainly clay, clay and sand, and fine sand, and there is no rock anywhere at possible foundation depths.

Though there is always a considerable depth of water, even when the river is at its lowest level, it was decided to found caissons for piers 2 to 5 on sand islands. As, however, one of the conditions of the contract was that the navigational channel piers, Nos. 3 and 4, had to be constructed simultaneously, the two islands for their caissons together seriously restricted the cross-section of the river. It should be noted that the velocity of the current at low water is from 3 to 4·4 ft. per sec., and at high water from 8·8 to 11·4 ft. per sec.; also, that there is a range between low- and high-water levels of up to 47 ft. All these conditions combined to threaten the sand islands with river-bed scour.

The Sand Islands Described, Destroyed and Threatened

The sand islands consisted of great steel cylinders sunk a little way into the river-bed, and filled with sand. The cylinders were ⅜ in. thick and the diameters of those for piers 3 and 4 were 121 and 111 ft., respectively. They were laid on the river bed, previously levelled by dredging, and were protected by circular wharves of vertical and raked piles. To prevent scour round the islands, a timber mattress was sunk and laid on the bed round each; it measured 250 ft. × 450 ft., but, in fact, proved ineffective.

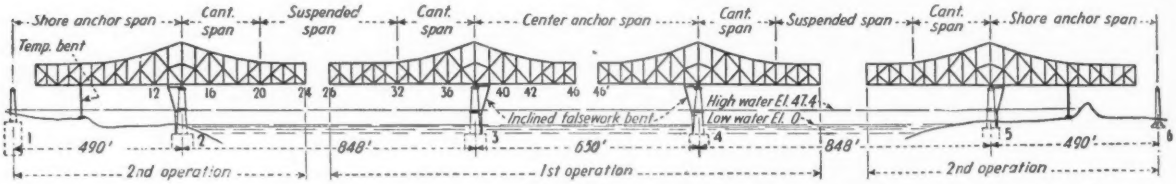
Dredging then began and caisson-sinking went ahead, but when No. 4 caisson had gone down only 15 ft., a washout of its sand island occurred, due to its being undercut, and within 3 min. all the sand had run out, and the steel shell of the cylinder near the run-out was forced against the caisson and torn. The caisson itself was tilted 7 ft. east and 2 ft. south, and some months were lost in correcting this and other damage. Caisson No. 3 also was seriously threatened as 40-ft. deep scour occurred only 100 ft. away from it. In fact, scours of 40 ft. and 50 ft. developed round both these piers, and it was pointed out that: "The sand-island method of caisson sinking is a potential erosion hazard."

Concerning frictional resistance to caisson-sinking—assessed by dividing the gross weight of the caisson less water displacement, by the area subject to friction—the following figures were computed at favourable opportunities during the sinking of each caisson:—

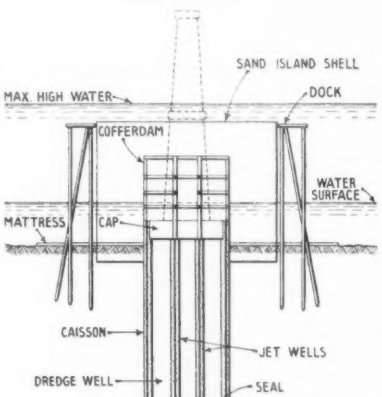
Caisson No.	Material penetrated	Frictional resistance Lb. per sq. ft.
1	Water-tight stiff clay	800
2	Tight clay and sandy clay... ...	850
	Ditto reduced by water jets ...	647
3	Sand and gravel, clay and sand, stiff clay, and grey sand ...	845
4	Sand and clay	736
5	Almost entirely fine sand ...	1,125

It will be seen, therefore, that far the greatest resistance was offered by fine sand. To reduce friction, four devices were tried: (1) The bottom 30 ft. of the outer caisson walls were made 6 in. thicker than the remainder; (2) the partition walls between the dredge holes or wells in each caisson began 7 ft. above the level of the cutting edges of the outside walls; (3) in all caisson walls, circular 8-in. wells extending from top to bottom were moulded at regular intervals; and (4) a system of pressure-jet pipes and nozzles was built in the outside walls, for ejecting water at various levels all round them, and so provide lubrication between those walls and the substances of which the river bed was composed.

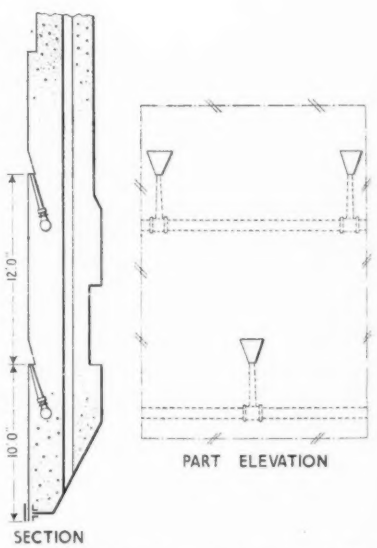
The efficacy of these various devices proved to be as follows: Device (1): All materials penetrated squeezed in tight above the 6-in. offset, and there was no evidence of any reduction in friction resulting from it. Device (2): The shorter partition walls did make sinking easier and also provided a useful clear space for cleaning and sealing the bottom of the caisson. Device (3): The 8-in. wells enabled explosives to be placed under the cutting edges when sinking became held up. Shots were fired under caissons Nos. 2, 3, and 4 to shake them and break the friction. Though this expedient probably had some effect on compact clay, it was the reverse of successful in sand, where it was characterised as "a method of desperation which seldom does any good and



Elevation of main river-crossing of Baton Rouge bridge, showing stages in the balanced-cantilever erection scheme, which requires no falsework in the river



Across-bridge section of assembled structures used in foundation construction at the Baton Rouge bridge



Detail of water-jet arrangement embodied in the caissons for the Baton Rouge bridge, which proved of little value in clay, and dangerous in sand

usually starts run-ins." Device (4): A variety of positions and angles were tried for the jets, but "as designed and located they were of little value in clay and very dangerous in sand." In every caisson "blows" followed jet application. Horizontal jets proved to be the most satisfactory. Air also was tried instead of water, but the jet orifices quickly became clogged with sand due to the drying effect of the air on it. After jets had been tried at all heights up each caisson, and in various arrangements, it was found that two tiers of jets advantageously placed and directed on clay gave the best results that could be expected from the use of water jets.

None of the caissons at Baton Rouge was designed to be weighted to aid sinking, but caisson No. 5 would not sink below −74 ft., and so it was decided that it must be weighted in the following manner. A 10-ft. reinforced concrete cap was placed on the caisson with hexagonal openings left over each dredge hole to pass a 2-yd. clamshell. Wooden casings were then built round these openings to a height of 50 ft., and cofferdam walls, designed to resist internal pressure, were built up on and round the cap, and the cofferdam was then filled with saturated sand. The cofferdam was raised four times and continuously kept filled with sand until a 7,500-ton load had been superimposed on the caisson. The conclusion was that all caissons should be designed so that they can be weighted, especially as they are then free from the danger of damage or even destruction resulting from "blows." Though progress by the cofferdam method adopted at caisson No. 5 was slow, owing to the limited size of the dredge holes, continued sinking was assured. We are indebted to our contemporary for two of the illustrations on page 206.

High-Speed Diesel-Electric Locomotives for the Southern Railway

First step in large-scale displacement of steam traction

THE Southern Railway has ordered three express diesel-electric locomotives capable of hauling main-line passenger expresses at maximum permissible speeds, which means that the locomotives are capable, under certain conditions, of reaching 100 m.p.h. Construction will begin shortly in the company's workshops at Brighton, and it is expected that the new locomotives will be in service towards the end of 1948.

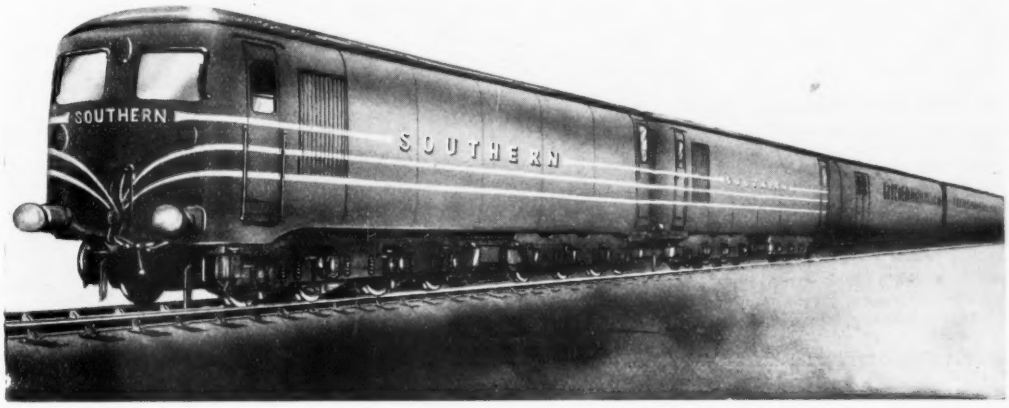
Each locomotive will have a 1,600-h.p. diesel-engine generator which will supply electric power to six axle-hung traction motors mounted on the bogies. The diesel-electric equipment is being produced by the English Electric Co. Ltd. The body and underframe will be mounted on two 8-wheel bogies; three of the axles in each bogie will be driven. Each unit will weigh approximately 120 tons in working order, and will be 62 ft. in length.

A driver's cab will be fitted at each end, and the portion of the body between the cabs will house the diesel generator, auxiliary machinery, control apparatus, and fuel tanks.

The locomotive units are so designed to enable two of them coupled to haul the heaviest trains of 500 tons at express speeds under the control of one crew.

In the first place, the locomotives will operate in the principal express services on the West of England route between Waterloo, Exeter, and Plymouth, but at the same time they will be capable of working on any other main-line route of the Southern Railway.

The present order is the first major step in the scheme for displacement of steam locomotives over a wide area of diesel-electric or all-electric traction.



Artist's impression of proposed Southern Railway twin-unit 3,200-h.p diesel-electric locomotives to be introduced on main-line services to the West of England

METALLIC PACKINGS.—On the stand of the United States Metallic Packing Co. Ltd. at the Engineering & Marine Exhibition at Olympia, will be shown, among other products made by this firm, a selection of air-cooled packings for superheated steam, and a range of automatic, self-adjusting, metallic packings for high speeds, temperatures, and pressures.

REPLACING SPANS IN A G.W.R. BRUNEL BRIDGE.—The G.W.R. is to carry out a considerable and difficult structural alteration to Chepstow Bridge, carrying the Newport-Gloucester lines over the River Wye. The bridge, designed by Brunel in 1852, consists of a 300-ft. tubular span over the river and three 100-ft. land spans at the south end, 50 ft. in height. The work involves the replacement of the wrought-iron land spans, carried on the top of cylindrical piers, by new steel spans of modern design.

MOVEMENT CONTROL OFFICERS' CLUB.—The annual general meeting and dinner of the Movement Control Officers' Club is being held at the Connaught Rooms, Great Queen Street, London, W.C.1, on Saturday, September 6, beginning at 5.45 p.m.; Major-General W. D. A. Williams, C.B., C.B.E., President, will preside. Membership is open to all past and present officers of Movement Control, and the already large membership includes many members of the railway, shipping, and other transport industries. Details may be had from the Hon. Secretary, Lt.-Colonel J. P. McCrudden, O.B.E., Nairn, Craddocks Avenue, Ashtead.

RESEARCH EXHIBITS AT OLYMPIA.—One exhibitor at the Engineering & Marine Exhibition which opens at Olympia on August 28 will be the Department of Scientific & Industrial Research. This stand will show testing equipment, methods of increasing the efficiency of boilers by the elimination of smoke, improved welding technique, etc. Other research organisations will be represented also. There will be a photographic display covering investigations relating to engine performance and durability by the British Internal-Combustion Engine Research Association, and the Motor Industry Research Association will be demonstrating a capacity-type electrical torquemeter. Experimental work on boiler availability will form part of the Fuel Research Station exhibit.

The Railways of Denmark

Evolution of the Danish railway system and its present characteristics on the occasion of its centenary

ON June 27 the Danish railways celebrated their centenary. The State Railways marked the occasion by an exhibition displaying old and modern features of railway working, models, and other items, and are publishing a history of the system.

The first railways in Denmark were private, the earliest concession being given to the Seeland Railway Company for a line between Copenhagen and Roskilde (about 20 miles). This line, opened on June 27, 1847, was extended to Korsör in 1856 by the same company. In succeeding years the company built the following lines: to Elsinore (*via* Hillerod), 1864; to Kalundborg, 1874; to Vordingborg, 1870; and to Frederikssund, 1879. By 1880 the Seeland company had built all the lines now forming the main routes on Seeland. In that year, however, the State took over the Seeland Railway Company.

In Jutland and Funen, railway building began later, the first line, between Aarhus and Randers, not being opened until 1862. In the following years construction proceeded rapidly, and mainly by British engineers. There were, however, certain financial difficulties, which led in the end to the State taking over all these lines, among which were the routes across Funen and the East Coast line in Jutland, all of great importance today. In 1874 a line was opened to serve Esbjerg, where the export trade was growing rapidly. In the years between 1867 and 1880, therefore, there were State railway lines in Jutland and Funen, and private lines in Seeland. In 1880 the most important of the present lines had been built.

General Construction Principle

In the years up to the first world war, many more lines were built, the principle being generally that lines of merely local interest were owned privately, while those of more importance belonged to the State. It was considered also a task for the State to build railways in thinly-populated districts.

Sometimes the State took over lines built by private companies; elsewhere the reverse took place, a State-built line being leased to a private company. There are now 50 private railways, the oldest of which was opened in 1869. To most of these lines the State contributed 50 per cent. of the cost of construction, and most of the remainder was provided generally by local towns and parishes, so that the lines in reality are only semi-private. In a few cases the State guaranteed 4 per cent. interest on the capital, but this procedure was soon abandoned.

An interesting feature of early railway working in Denmark was the method of operating a carriage from Gentofte to Copenhagen. This was allowed to run by gravity down the gradient from Gentofte to Hellerup, where it was braked by the guard and then attached to the train from Klampenborg to Copenhagen.

There has been continuous activity since 1874 in doubling single-track sections. Third and fourth tracks between Copenhagen and Klampenborg were opened in 1928, and at present quadrupling is being extended westwards from Copenhagen to Glostrup.

The first railway in Denmark had 58-lb. rails in 18 ft. lengths, but today main lines are laid with 90-lb. flat-bottom rails welded into lengths of 98½ ft., with sleepers of impregnated beech. Generally there is no soleplate, the rails resting directly on the sleepers, to which they are attached by three screws. The newest type of main-line rail weighs 120 lb. and is welded into 197-ft. lengths, fixed to the sleepers with four screws.

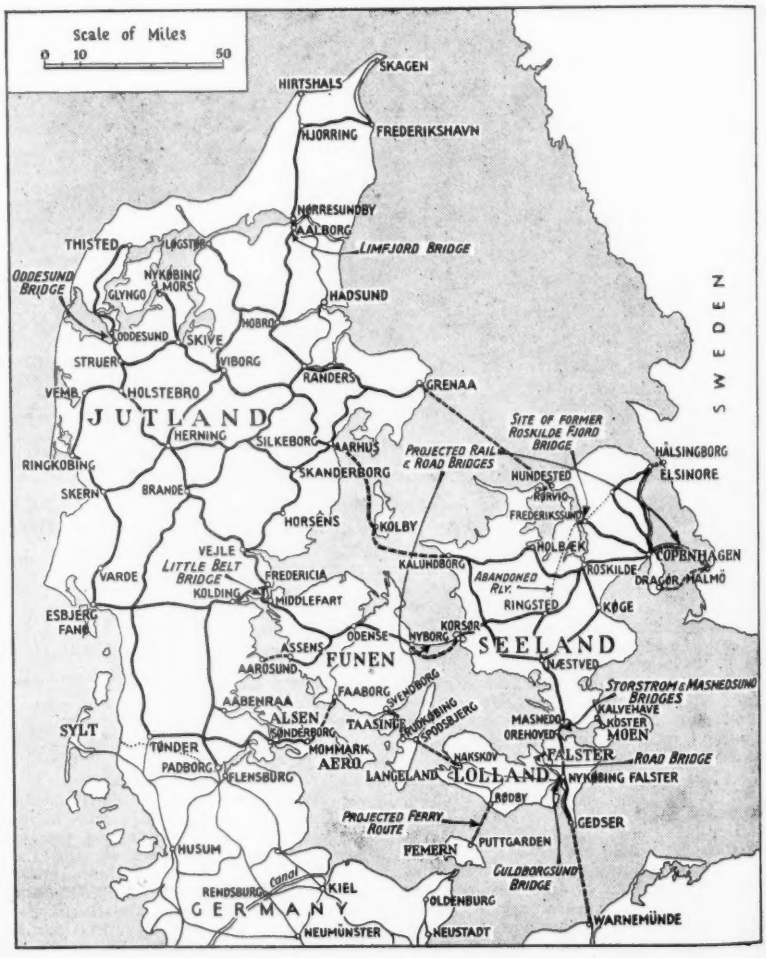
While gradients in Denmark generally are not very severe, the many sounds and belts have been a great obstacle to communications. To connect across them, eight train-ferry routes were opened, two of which routes (Copenhagen-Malmö and Elsinore-Hälsingborg) are worked in co-operation with the Swedish State Railways, and one (Gedser-Warnemünde) was worked in co-operation with the German Reichsbahn. This last-named route had been closed for the last two years, but has been re-opened recently for goods traffic and the repatriation of refugees by agreement with the administration of the Russian zone in Germany.

The most important of the train-ferry routes is that between Korsör and Nyborg, a 16-mile crossing on the main route between Seeland, Funen, and Jutland. This crossing is served at present by five large diesel ferries and two diesel motorcar ferries, with a further steam ferry in reserve. The train ferries each can take about 30 goods wagons and some 1,500 passengers.

Three of the earlier train-ferry crossings in the last 12 years have been replaced by bridges. One of these, the Oddesund Bridge, has a bascule span, while the two others are high-level bridges. The Lillebelt Bridge, opened in 1935, is 3,864 ft. long, with a free height 108 ft. above water. It carries two tracks, a roadway and a footpath. The Storstrøm Bridge, opened in 1937, is one of the longest bridges in the world, being 10,537 ft. long and 85 ft. above water. It carries a single track, a roadway, and a cycle track.

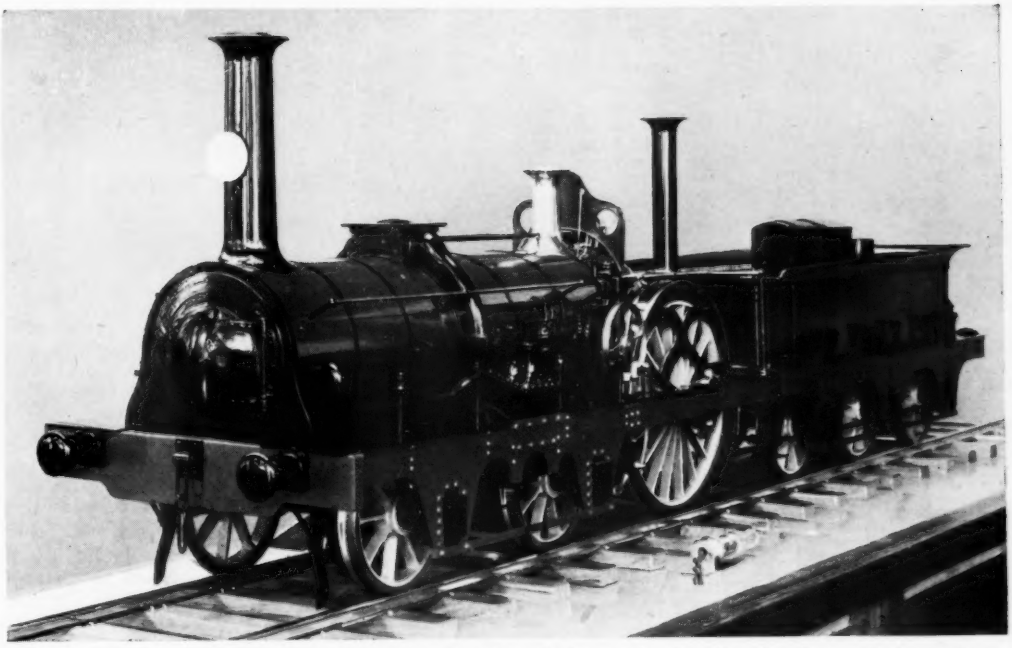
The opening of these bridges made it possible to accelerate traffic considerably. The Lillebelt Bridge, in particular, was important, as from the date of its opening the *Lyntog* (lightning) diesel trains were introduced. At the Great Belt crossings these four-car trains run direct on board the ferries, which sail at once. As soon as the ferry dock on the other side is reached, the train resumes its journey immediately, starting from the ferry. The State railways have eight of these trains. Every morning four of them run from Copenhagen to different places in Jutland, returning in the afternoon. Two others start from Jutland in the morning for Copenhagen, and return in the evening.

By the introduction of the *Lyntog* services and the opening of the Lillebelt Bridge, it has been possible to reduce the

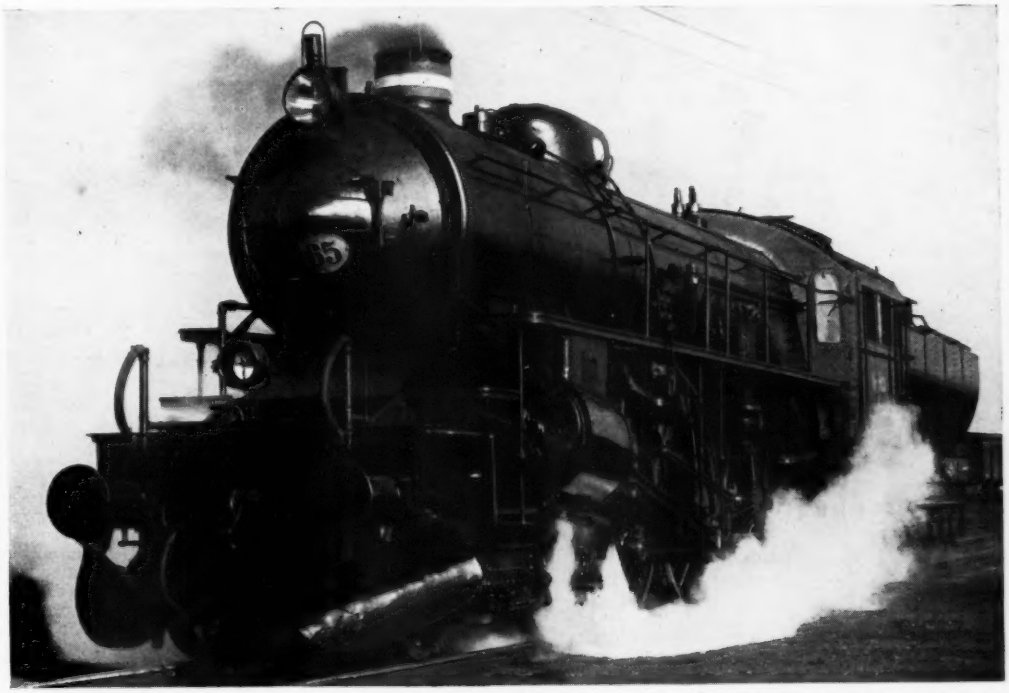


Principal railways, ferry routes, and inter-island bridges of Denmark

The Railways of Denmark



Model of a locomotive of the Copenhagen-Roskilde Railway, the first line in Denmark (opened on June 27, 1847)



A modern Danish express engine. Note the national colours (red-white-red) displayed in horizontal bands round the chimney

Steam paddle-wheel train ferry built in 1883

overall time from Copenhagen to Aarhus from 7½ to 4½ hr., and similarly for many other towns. The trains, therefore, are very popular and always crowded. While the fastest speed permitted for steam trains is 62 km.p.h., the *Lyntog* are permitted to run at speeds up to 75 m.p.h., and they actually average over 75 m.p.h. on many stretches.

Danish railways, both State and private, have for a long time been interested in internal-combustion traction, and the first petrol railcar in Denmark began running on a private line as far back as 1922; and the State Railways followed suit very soon. Up to 1930 a number of petrol railcars was acquired, but since then only diesel railcars and locomotives have been built, nearly all of Danish manufacture. Most of the engines have been supplied by Frichs, of Aarhus, but a number has been acquired also from Burmeister & Wain, of Copenhagen.

The different types now in use have proved most reliable, and before the war they were used to such an extent that diesel and petrol traction accounted for 85 per cent. of the train-mileage on the private railways. During the war it was necessary to extend the use of steam traction, but this is falling off again. The Danish State Railways have 83 diesel railcars, and before the war diesel traction accounted for approximately 26 per cent. of the total train-mileage.

On the Copenhagen suburban lines, which carry a heavy passenger traffic, electrification began in the 1930s. the first electric line being opened in 1934. The 1,500-v. d.c. system, with overhead wire, is used. At present 15½ miles of double track are electrified, and two more lines, totalling some 11 miles, are in course of conversion. Most trains, however, still are hauled by steam locomotives of which there are some 2-8-0s for hauling heavy goods traffic, and a batch of Pacifics for express passenger service.

On the economic side, it must be remembered that Denmark has no coal or ore deposits, and that distances are short. There are no severe hills and the roads are excellent, so that competition from road transport naturally is intense. For long-distance traffic, competition from sea transport is heavy, and in recent years air competition has appeared, Copenhagen being an important centre for many air lines.

These factors naturally influence the railway economy. In 1938-39, the State Railways receipts were Kr. 126·1 million, while working expenses amounted to Kr. 130·6 million, so that there was a deficit of Kr. 4·5 million, to which depreciation (Kr. 6·9 million) and interest on capital had to be added. These figures improved very much during the war, partly because all competition ceased, and partly by reason of the huge tonnages of home fuel (peat and brown coal) that was carried. There was also intensive traffic for the German Wehrmacht, although income from this source was on paper only, as the Germans never paid. While the tonnage carried in 1928-39 amounted to 4·59 millions, the volume in 1943-44 rose to 13·82 millions, which was the highest ever reached on the State Railways.

Passenger traffic rose from 52 million in 1938-39 to 89·5 million in 1943-44, in spite of drastic reductions in train services. Receipts in 1944-45 rose to Kr. 298·4 million, while expenses amounted to K. 251·3, leaving a surplus of Kr. 47·1 million. The normal depreciation was Kr. 5·4 million, but, in addition, the whole income from transport for the Germans (Kr. 62 million) was used for extraordinary depreciation.

Statistics Compared

In the following table a few statistics are given for the State and the private lines in 1945-46:—

	State Railways	Private Railways
Route-mileage	1,497	1,536
Double-track mileage ...	512	—
Ferry and steamer routes	116	—
Steam locomotives ...	587	214
Diesel and petrol locomotives and railcars...	110	187
Electric motor coaches	62	—
Number of journeys (millions)	80·8	20·2
Passenger-miles (millions)	1,607	232
Goods-tonnage (millions of tons)	9·8	5·24
Goods ton-miles (millions)	765	83
	Kr.	Kr.
Receipts, Passenger ...	119·3 million	23·2 million
Goods ...	109·2 million	29·2 million
Total	252·7 million	56·2 million
Working expenses ...	256·1 million	49·8 million

The private railways were not too well off before the war. Their receipts were Kr. 19·69 million, and the expenses Kr. 22·37 million. During the war the position improved very much. In 1944-45 the receipts had risen to Kr. 63·25 million, but expenses only to Kr. 54·94 million, thus leaving a surplus of Kr. 8·31 million.

PROTECTION OF METALS AGAINST CORROSION.—Efficient protection against deterioration through rusting and corrosion, especially under tropical conditions, is a problem which has always confronted manufacturers of ferrous metals. One of the main essentials in combating rust is to ensure that the metal surface is thoroughly clean before protective coatings are applied, and with this end in view, the General Electric Co. Ltd. has installed at its Witton works a new pickling and priming shop for the treatment of cast and fabricated ferrous components for a wide range of electrical products. Such components are subjected to this treatment as soon as they leave the foundry or moulding sections, and they are thereby rendered rust-proof, so that if necessary they can be stored in the open without fear of deterioration. The treatment provides, also, a protective coating which serves as an ideal base for the reception of the finishing processes subsequently employed. The process involves pickling and washing followed by the provision of a sealed protective phosphate film and a final spraying with a suitable primer paint.

NEW VEHICLE FOR SEVERN TUNNEL TRACK MAINTENANCE.—To speed up and facilitate the work of relaying in the Severn Tunnel, the G.W.R. has designed a special vehicle, fitted with two diesel-electric hoists, which will enable pre-assembled track to be taken into the confined space of the tunnel, placed into position, and the old track taken out. The vehicle will be built at Swindon, and its use is expected to reduce the number of Sunday occupations necessary for maintenance work each winter.

CANADIAN PACIFIC RAILWAY COMPANY.—The Canadian Pacific Railway Company, Montreal, has issued the following announcement: During recent years it has been customary for the directors to make an announcement during August with regard to a dividend on the ordinary stock of the company. No meeting of the board will be held in August of this year, as the Chairman and President and a number of directors are absent on an inspection of the company's Western Lines. Notwithstanding that gross earnings from railway operations continue at a high level, the heavy and progressive increases in expenditures for labour, materials, and supplies have reduced net earnings to the extent of over a million and a half dollars for the period of six months of 1947 as compared with the corresponding period of 1946.

An Automatic Tamping Machine

A 60-ft. rail length of track tamped in six minutes

ACUTE shortage of skilled labour has given an added attraction to mechanical devices for the performance of operations which heretofore have been undertaken by hand labour. This applies with particular force to permanent way maintenance, of which there are substantial arrears in most countries.

A Swiss machine already used in many European countries has just been introduced experimentally into this country by the Chief Engineer's Department, L.N.E.R., by arrangement with the manufacturers, Materiel Industriel S.A. Lausanne, through their British Agent, 58, Victoria Street, Westminster. This is the Matisa automatic tamping machine for railway sleepers at present being tested on the L.N.E.R.

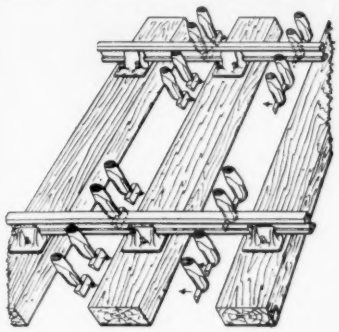


Fig. 1

The machine takes the form of a 4-wheel rail trolley which can travel from the depot to the site under its own power at a speed of about 25 miles an hour. It draws a trailer consisting of a shunting or parking platform which can be set up near the site of the work and enables the machine to be pushed clear of the running line for the passage of traffic.

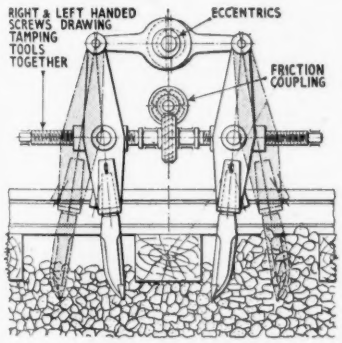
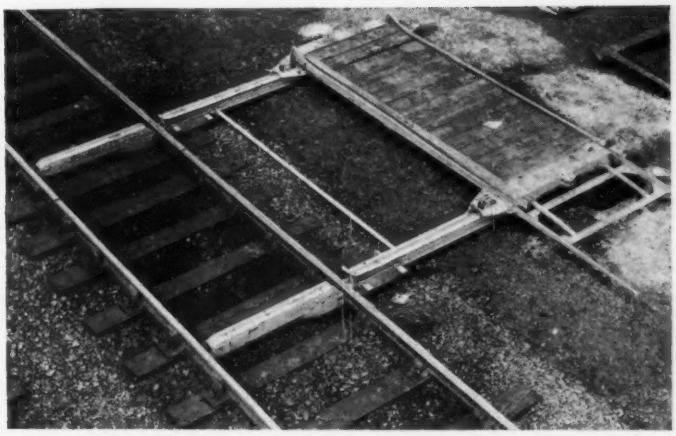


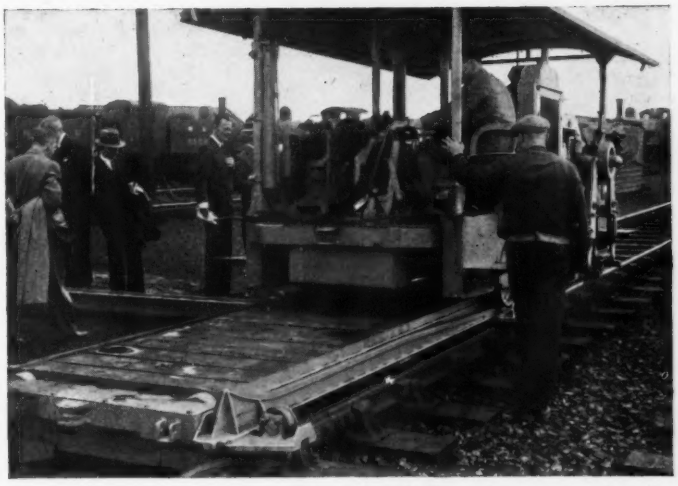
Fig. 2

An essential feature of the machine is the tamping mechanism, which is housed in a pair of vertically-reciprocating tool frames operated by compressed air. Each frame holds four pairs of opposed tools, which are arranged in relation to the running rails and sleepers as shown diagrammatically in the accompanying sketch, Fig. 1, and throughout the cycle of operations these tools are vibrated at a



A view of the parking platform and transverse rails. The platform is pushed over the running rails to receive the machine and then returned to the position shown. Note the transverse rails are clear of all interference to passing traffic

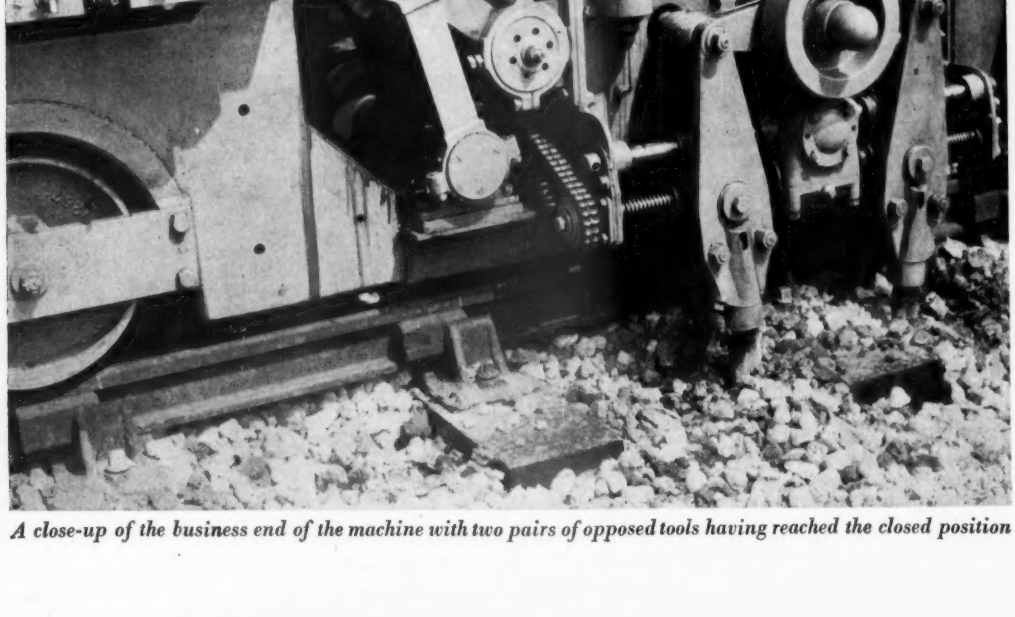
The machine on its platform being pushed clear of the running rails for passage of traffic



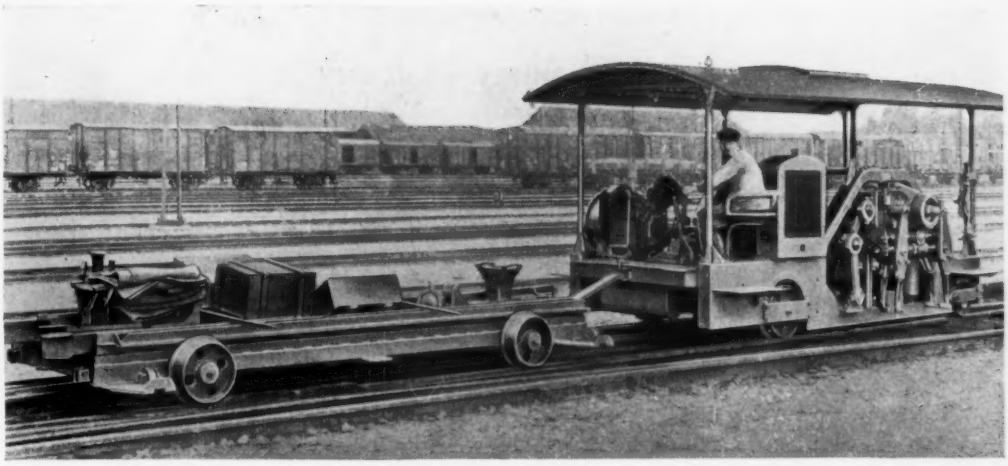
The machine being driven upon its platform in preparation for transverse shunting to the parking rails. Note the double-flanged wheels of the platform which give the transverse movement

An Automatic Tamping Machine

A close-up of two pairs of opposed tools in progress towards the sleeper



A close-up of the business end of the machine with two pairs of opposed tools having reached the closed position



Matisa tamping machine travelling from depot to site under its own power and drawing its shunting platform as a trailer

very high frequency by means of eccentrics.

Under the control of a single driver the machine progresses from sleeper to sleeper, and at each one the 8 pairs of tools penetrate the ballast on each side of the sleeper, and are then drawn together by the action of right-hand and left-hand screws until the desired compression of ballast beneath the sleeper is reached. These screws are under the control of a friction coupling which automatically slips when the desired compression is reached.

Fig. 2 shows a pair of tamping tools at work and indicates how the ballast is moulded beneath the sleepers. Usually one penetration of the tamping tools is sufficient, but if the track has been given a lift of more than 2 in. a second tamping is required. On an average this machine takes about 15 sec. to tamp a sleeper, and thus a 60-ft. length of track is tamped in 6 min. It is claimed that the vibrating motion, combined with the tamping action, causes each unit of ballast to occupy the position giving maximum density and finality to the mass, and will permit a substantial reduction in the period of controlled traffic speeds after permanent way renewals.

Matisa automatic tamping machine demonstration near Parkeston Quay, L.N.E.R., on Sunday, July 20, 1947

Group of Civil Engineers of the main-line railways, L.P.T.B., and others, including : *L.N.E.R.*, G. B. Barton, Assistant Chief Engineer, R. C. Rattray, H. C. Orchard, J. R. Dallmeyer, C. C. B. Herbert ; *L.M.S.R.*, W. K. Wallace, Chief Civil Engineer, H. B. Everard, F. C. Johansen; *G.W.R.*, M. G. R. Smith, Assistant Engineer (Maintenance); *Southern Railway*, A. Dean, Assistant Chief Civil Engineer, S. Maltby ; *L.P.T.B.*, J. Ratter, Civil Engineer (Maintenance); *Victorian Government Railways*, A. G. Fletcher, Chief Civil Engineer ; *Railway Gazette*, J. A. Kay ; *S.N.C.F.*, M. Pirolle ; *Materiel Industriel S.A.*, G. S. Thurley

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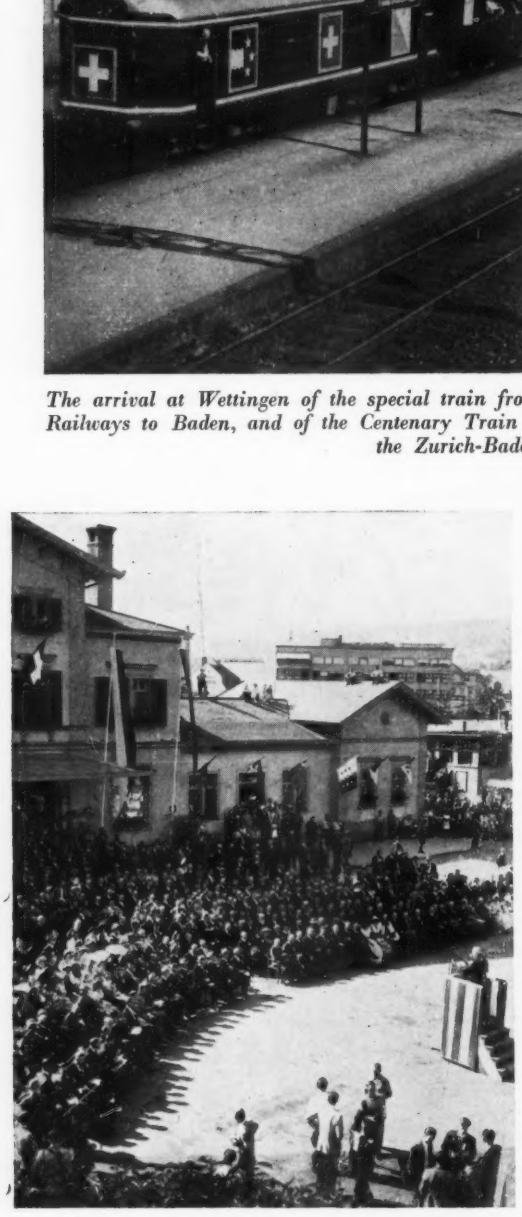
ARCHITECTURAL AWARD FOR L.M.S.R. DERBY SCHOOL OF TRANSPORT.—The L.M.S.R. School of Transport, Derby, which was designed by Mr. W. H. Hamlyn, F.R.I.B.A., recently has been awarded the bronze medallion of the Nottingham, Derby, and Lincoln Architectural Society, for the best building erected within the three counties during the period January 1, 1937, to December 31, 1946. This award normally is made every three years, and the extended period for which it is now made was due to the war. A plaque recording the award will be fixed to the building in due course, and a diploma, signed by the jury of five architects and three laymen who decided the award, will be presented to the architect. Mr. W. H. Hamlyn, who is a native of Wigan and is 58 years of age, served his articles in Liverpool, and has been on the architectural staff of the L.N.W.R. and L.M.S.R. since 1911, being appointed head of the L.M.S.R. Architectural Department in 1932. Prior to, and during, the recent war, he carried out, among other important work, the application of camouflage to railways. More recently, Mr. Hamlyn has developed some new types of prefabricated construction which will lead to considerable economies in the erection and maintenance of railway station buildings in the future.

Swiss Railway Centenary

(*See article on page* 219)

The arrival at Wettingen of the special train from Zurich (left) conveying guests of the Swiss Federal Railways to Baden, and of the Centenary Train (right), which is a reproduction of the first train on the Zurich-Baden Railway in 1847



Scene during the official ceremony at Baden with which the centenary celebrations in that town were opened on August 9

Official visitors to the celebrations escorting girls in the costume of a hundred years ago to the Centenary Train at Baden

RAILWAY NEWS SECTION

PERSONAL

Transport Commission Executives

Mr. Alfred Barnes, Minister of Transport, announced on August 20 that Lord Latham has been appointed Chairman of the London Transport Executive, and Sir Eustace Missenden Chairman of the Railway Executive under the British Transport Commission.

RAILWAYS STAFF CONFERENCE

Mr. H. Aidley has relinquished the position of Secretary of the Railways Staff Conference on his return to the L.M.S.R. on promotion. He has filled the position since 1937, and his services were recognised in the New Year Honours, 1947, by the award of the M.B.E. His successor as Secretary of the Railways Staff Conference is Mr. J. G. Norton, hitherto Assistant Secretary.

We regret to record the death on August 12 of Mr. Ernest Henry Dwane, M.B.E., former Chief Accountant & Auditor, Nizam's Guaranteed State Railway.

Mr. E. H. Armitage has resigned the Chairmanship of the Hoffmann Manufacturing Co. Ltd., due to business reasons, but retains his seat on the board. Mr. J. W. Garton, Director, has been elected Chairman.

The late Mr. Thomas Wolsey, who was a Director of Thomas Tilling Limited and of the Lincolnshire Road Car Co. Ltd., left £222,391.

Dr. Hugh O'Neill, M.Met., F.I.M., Chief Metallurgist, L.M.S.R., has been appointed to the Chair of Metallurgy at University College, Swansea, and will begin his new duties on September 1. Dr. O'Neill was educated at Sheffield University, and for thirteen years lectured in metallurgy at Manchester University; during that period he published his book, "Hardness of Metals." He joined the L.M.S.R. Research Department in 1943, and shortly afterwards became Chief Metallurgist. He has contributed many papers to engineering and metallurgical institutions dealing with the metallurgical problems of railways; prominent among them are: "Alloy and Fine-Grained Steels for Locomotive Coupling Rods"; "Metallurgical Studies of Rails"; and "Railway Bearing Metals: Their Control and Recovery" (jointly with Mr. J. N. Bradley).

The late Mr. Percy Cross, who was a Director of the Midland Uruguay Railway Co., Ltd., left £319,296.

COLONIAL RAILWAY APPOINTMENTS

Mr. H. J. Phillips to be Assistant Accountant, Nigerian Railway.

Mr. W. H. Best to be Assistant Traffic Manager, Nigerian Railway.

Mr. C. W. Putsey to be District Traffic Superintendent, Nigerian Railway.

Mr. P. Good and Mr. D. B. Hoseason have been elected, respectively, President and Vice-President of the Institution of Electrical Engineers, from October 1. Mr. J. Hacking, Mr. T. G. N. Haldane, Professor E. B. Moullin, and Mr. A. J. Gill, who are already Vice-Presidents, will continue to serve in that capacity.

Mr. Frederick H. Eaton has been appointed Assistant Vice-President of the American Car & Foundry Export Company.

BRITISH TRANSPORT COMMISSION MEETING

The members already appointed of the British Transport Commission held a meeting on August 13 for the purpose of preliminary discussion. Sir Cyril Hurcomb presided, and the following also attended: Lord Ashfield, Mr. John Benstead, Lord Rusholme and Sir William Wood. The meeting was at 55, Broadway, S.W.1, which, by arrangement with the L.P.T.B., will be the headquarters of the Commission, as soon as arrangements for staffing have been made.

We regret to record the death on August 16, at the age of 72, of Mr. Henry Samuel Rogers Boyagian, C.I.E., A.M.I.C.E., formerly Chief Engineer, Assam-Bengal Railway, who retired in 1934.

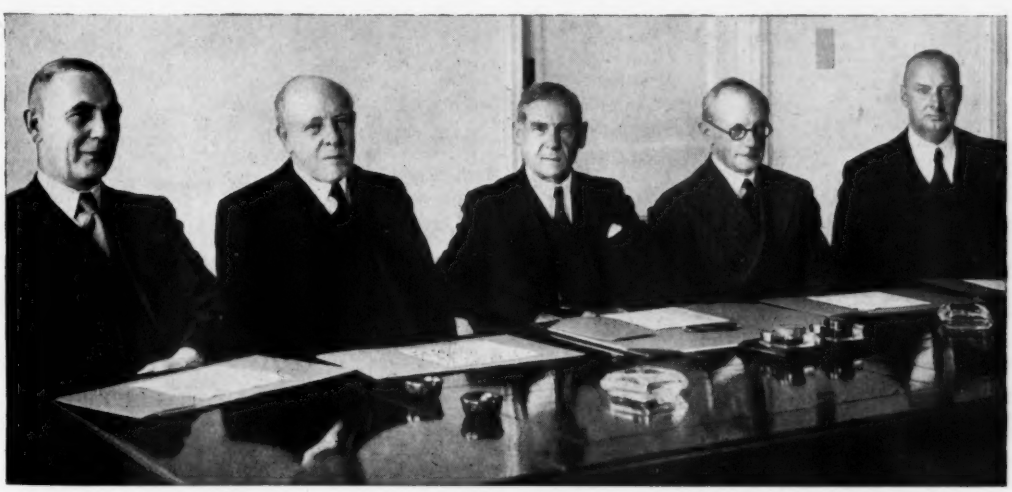
The late Sir John Pretyman Newman, who was a Director of Stream-Line Filters Limited, left £33,172.

Mr. J. H. Brebner (Chief Public Relations & Publicity Officer of the L.P.T.B.) has accepted the Presidency of the Regent Advertising Club, in succession to Sir Patrick Hannon, M.P.

Mr H. C. Walter, who, as recorded in our June 27 issue, has been appointed Assistant to the Traffic Manager, Southern Railway, was educated at St. Olave's Grammar School, London, and joined the L.B.S.C.R. in the General Manager's Office in 1919. In 1928 he was selected for special training; and he was appointed Assistant to London West Divisional Superintendent in 1933; Assistant to Western Divisional Superintendent in 1937; and Assistant Southern Divisional Superintendent in 1941; before being made Assistant London Central Divisional Superintendent in 1946.

Mr. Anthony W. Neele, who has been appointed Chief of Transport, Leopoldina Railway, was educated at Aldenham School. He served with the London Underground Railways in the Operating Department from 1924-28, and then joined the Central Argentine Railway, with which he held the position of Assistant Divisional Superintendent. In 1939 Mr. Neele joined the Royal Engineers, serving with the 1st Canadian Army during the invasion of France, and subsequently, with rank of Lt.-Colonel, as A.Q.M.G. (M), 8 Corps, in the occupation of Germany. He joined the Leopoldina Railway in December, 1945, and has now been appointed Chief of Transport. Mr. Neele was recently created a Knight Officer of the Order of Orange Nassau with Swords by the Queen of the Netherlands.

First Meeting of British Transport Commission



Members of the British Transport Commission at its meeting on August 13 (*see accompanying paragraph*). *Left to right: Mr. John Benstead, Lord Ashfield, Sir Cyril Hurcomb* (*Chairman*), *Sir William Wood, and Lord Rusholme*

Elliott] [& Fry

Lord Ashfield

Appointed a member of the British Transport Commission

Sir William Wood

Appointed a member of the British Transport Commission

Mr. John Benstead

Appointed a member of the British Transport Commission

Lord Rusholme

Appointed a member of the British Transport Commission

The Rt. Hon. Lord Ashfield of Southwell, P.C., who, as recorded in our August 15 issue, has been appointed a member of the British Transport Commission, is Chairman of the London Passenger Transport Board. Albert Henry Stanley, first Baron Ashfield of Southwell, was born at Derby in 1874, and in his early years accompanied his parents to the U.S.A., where he received the greater part of his education. His first post was with the Detroit City Street Railway Company; at the age of 18 he became Superintendent of one of the divisions, and by the age of 20 was in control of the whole street railway system of Detroit. In 1898 he served in the Spanish American War as an ordinary seaman in the U.S. Navy. In 1903 he relinquished the post of General Superintendent, Detroit City Street Railways, and became Assistant General Manager, Street Railway Department, Public Service Corporation of New Jersey. By 1907 he had become General Manager of that corporation; but in the same year he returned to England, as General Manager of the Metropolitan District Railway. In 1910 he became General Manager of the London United Tramways, and was also appointed Managing Director of the Underground Electric Railways Co. of London Ltd. and its then associated companies. In 1914 he received the honour of knighthood. In 1916 he became Director-General, Mechanical Transport, at the War Office; on the formation of Mr. Lloyd George's first Cabinet he became President of the Board of Trade and Privy Councillor, and coalition Unionist M.P. for Ashton-under-Lyne. He returned to the Underground in 1919, and was appointed Chairman & Managing Director of the Underground group. In 1920 he was raised to the peerage. Between 1930 and 1933 Lord Ashfield was constantly engaged in the negotiations which led to the London Passenger Transport Act, and on the formation of the Board in 1933 he became its Chairman. Under his Chairmanship the Board has proceeded with many extensions and improvements. In May, 1940, he became a member of the Railway Executive Committee; and during that year the London Aircraft Production Group, consisting of the Board and four London road vehicle manufacturers, was formed, of which he became Chairman. Lord Ashfield is Chairman & Managing Director of the North Metropolitan Power Company, and a Director of the Midland Bank Limited and of Imperial Chemical Industries Limited, and has been a member, among other bodies, of the University of Cambridge Appointments Board and the Imperial Communications Advisory Committee. He is a Fellow of the Royal Society of Arts, and a Past-President of the Institute of Transport.

Sir William Valentine Wood, K.B.E., M.Inst.T., who, as recorded in our August 15 issue, has been appointed a member of the British Transport Commission, is President of the Executive, London Midland & Scottish Railway. He joined the Accountant's Department, Belfast & Northern Counties Railway, in 1898. That undertaking was acquired by the Midland Railway of England in 1903, and he continued to serve in the Accountant's Department of the Northern Counties Committee of that railway. When the Government took control of the Irish railways in 1917 he was appointed Secretary, and later a member, of the Railway Accountants Committee set up by the Irish Railway Executive Committee. On the formation of the Ministry of Transport in 1919, he was transferred to London as Director of Transport (Accounting), and in 1921 became Accountant to the Ministry. In 1924 he returned to railway service as Assistant to the Accountant-General, L.M.S.R., and was appointed Controller of Costs & Statistics in 1927, which position he vacated in 1930, to become Vice-President, Finance & Service Department. He was created a Knight Bachelor in the Coronation Honours List in May, 1937. Sir William Wood became President of the L.M.S.R. in 1941. On numerous occasions he has given evidence on behalf of all the main-line railway companies before Parliamentary committees and other bodies. He is an authority on railway finance. From 1926 to 1936 he was a member of the Railway Statistics Committee, of which he was Chairman from 1930 onwards. He served as Chairman of the General Managers' Conference, Railway Clearing House, for 1933, for 1937, and for 1945. He has taken a prominent part in the deliberations of the Railway Executive Committee, of which he is one of the original members. Sir William Wood was President of the Institute of Transport for 1943-44. He was made a K.B.E. in the New Year Honours List, 1947.

Mr. John Benstead, C.B.E., who, as recorded in our August 15 issue, has been appointed a member of the British Transport Commission, is General Secretary of the National Union of Railwaymen. He was born in 1897, and joined the Great Northern Railway in 1911. From 1915 to 1919 he served with the Royal Navy, mainly in H.M.S. *Warspite*. Mr. Benstead was Secretary, Peterborough No. 1 Branch, National Union of Railwaymen, from 1922 to 1935, and held appointments also during that period as Secretary, Eastern District Council (1923-29), and as a member of the National Executive Committee (1930-32). He became Organiser, Southern District, in 1935, and was appointed Assistant General Secretary in 1940, and General Secretary from the beginning of 1943. He was a member of Peterborough City Council from 1929 until 1935, and was Deputy-Mayor of that city in 1932. He relinquished a prospective parliamentary candidature for Ashton-under-Lyne on being appointed a full-time officer of the N.U.R. in 1935. Mr. Benstead is at present a member of the T.U.C. General Council; President of the International Transport Workers' Federation; and a member of the Advisory Council to the Committee of the Privy Council for Scientific & Industrial Research, of the Colonial Economic & Development Council, and of the Royal Commission on the Press. He was made a C.B.E. in the King's Birthday Honours, 1946.

Lord Rusholme, who, as recorded in our August 15 issue, has been appointed a member of the British Transport Commission, is General Secretary of the Co-operative Union Limited. Robert Alexander Palmer, first Baron Rusholme, was born in 1890, and was educated at St. Mary's School, Ashton-on-Mersey. He joined the staff of the Co-operative Union Limited in 1909, and became Cashier in 1920, and General Secretary in 1929. He served in The Manchester Regiment, 1914-18, in Egypt, Belgium and France. Lord Rusholme, who was raised to the peerage in 1945, is President of the International Co-operative Alliance, and Joint Secretary of the National Council of Labour. He will be resigning the General Secretaryship of the Co-operative Union. He was chosen to preside at the Co-operative Congress in 1945. He has travelled widely on Co-operative business, visiting most European countries, and in 1944 led a Co-operative delegation to the U.S.S.R. Lord Rusholme is a Justice of the Peace for the City of Manchester. He has served on a number of public bodies, including the committee set up by Mr. Ernest Bevin (when Minister of Labour) to consider training for business administration.

Mr. D. M. Gracie, M.B.E., who, as recorded in our June 27 issue, has retired from the position of District Goods Manager, Sheffield, L.N.E.R., entered Great Central Railway service in 1900 at Frodingham. A year later he was transferred to the District Superintendent's Office at Doncaster, and remained there, serving in various capacities, until 1910. Between 1910 and 1915 he carried out a special course of higher grade training in the General Manager's, Chief Goods Manager's, Superintendent's, Locomotive Running Superintendent's, Signal Superintendent's, Engineer's, Stores Superintendent's, Rolling Stock and Portmaster's Departments. From May, 1915, until May, 1919, Mr. Gracie served in the Royal Naval Reserve as Assistant Paymaster, and in the Royal Naval Volunteer Reserve as Lieutenant. In July, 1919, he returned to G.C.R. service, and was appointed Assistant District Traffic Manager (Commercial), becoming Assistant District Traffic Manager (Operating), at Manchester, in October, 1920. In 1924 Mr. Gracie was appointed District Superintendent, Leeds, and in 1937, District Goods Manager, Sheffield.

L.N.E.R. Staff Changes

Mr. E. G. Brentnall, Assistant to Engineer (Signals), Edinburgh, to be Assistant Chief Engineer (Signals), in succession to Mr. A. E. Tattersall, who is retiring next September.

Mr. A. K. Terris, District Engineer, Glasgow, to be Assistant Engineer (London).

Mr. R. E. Sadler, Chief Technical Assistant (Construction), London, to be Assistant to Engineer (London).

Mr. M. B. Macrae, Technical Assistant (Steelwork), Chief Engineer's Office, to be Chief Technical Assistant (Construction), Engineer's Office (London).

Mr. S. A. Finnis, Assistant to Divisional General Manager, North Eastern Area, to be Assistant Divisional General Manager, North Eastern Area.

Mr. H. L. Hopkins, District Goods & Passenger Manager, Lincoln, to be Portmaster, Grimsby & Immingham, in succession to Mr. L. R. Christie, retired.

Mr. A. S. Railston, Assistant Mineral Manager (Southern Area), Doncaster, to be District Goods Manager, Manchester, in succession to Mr. H. S. Owen, retiring.

Mr. W. D. Havelock, Temporary Assistant to the Divisional General Manager, North Eastern Area, to be District Goods Manager, Leeds.

Mr. C. B. Glenesk, District Engineer, Guide Bridge, to be District Engineer, Glasgow.

Mr. R. R. M. Barr, Dock Superintendent, Hull (Western Docks), to be Assistant Portmaster, Grimsby & Immingham, in succession to Mr. J. R. Bailey, retired.

Mr. G. E. Blyton, Marine Workshop Manager, Parkeston Quay, to be Assistant to Marine Superintendent Engineer.

Mr. W. Mackenzie, Assistant Engineer for Docks, to be Chief Engineer for Docks (North Eastern & Great Central Section), in succession to Mr. A. Tulip, retiring.

Roller Bearings for L.M.S.R. Locomotives

Twenty-two of the 150 new steam locomotives which are being built in L.M.S.R. workshops this year are being fitted experimentally with roller bearings with the object of obtaining greater availability, a higher annual mileage, lower maintenance costs, and smoother running.

Although it may be that reduced coal consumption will result from the fitting of these bearings, further experiments for fuel economy are to be made with 20 locomotives fitted with the Caprotti type of poppet valve gear, 10 of which will be fitted with roller bearings, and 10 with standard plain bearings.

Included in the 150 locomotives being built this year are 20 of a new design of freight locomotive of the 2-6-0 type ("4F" classification). The full programme is:—

		To be built at :
Class "7P," 4-6-2 passenger	2	Crewe
Class "5," 4-6-0 mixed traffic	70	Crewe & Horwich
Class "4," 2-6-4T, mixed traffic	48	Derby
Class "4F," 2-6-0 freight (new design)	20	Crewe
Class "2F," 2-6-0 freight ...	10	Crewe
Total	150	

The two 4-6-2 locomotives will be a development of the existing "Duchess" class and will incorporate roller bearings to all the axles of both locomotive and tender. The bearings will be supplied by British Timken Limited and the Skefko Ball Bearing Co. Ltd.

Of the Class "5," 4-6-0 locomotives, 30 will be re-designed and equipped as under:—

Ten with roller bearings and Walschaerts valve gear.

Ten with roller bearings and Caprotti valve gear.

Ten with plain bearings and Caprotti valve gear.

These three groups of locomotives will be very carefully tested one against another, and also in comparison with a batch of ten standard Class "5" locomotives having plain bearings and Walschaerts valve gear. The trials of these 40 locomotives will include, not only the usual dynamometer car tests, but also a detailed comparison of costs.

The Caprotti valve gear will be supplied by the Associated Locomotive Equipment Co. Ltd. and the roller bearings which will be applied to all axles of both locomotive and tender will be supplied by British Timken Limited.

The 2-6-4 tank locomotives follow the existing design introduced two years ago, and the Class "2F" 2-6-0 are identical with the new small freight locomotives already in traffic.

The Class "4F" 2-6-0 locomotive is to be a new design and supersedes the well-known standard Class "4F" 0-6-0 designed by Sir Henry Fowler as long ago as 1911, of which no less than 772 are at work. The new locomotive will have two outside cylinders, a double blast pipe and chimney, and all the latest features which have been incorporated into recent L.M.S.R. practice.

L.N.E.R. Manchester District Control

The L.N.E.R. Manchester District Control Office, evacuated to Godley during the war, has returned to its normal peacetime location at London Road Station. Entirely new and up-to-date equipment has been installed in the London Road Control Room, which is now one of the most modern in the country. All the equipment has been supplied and fitted by Standard Telephone & Cables Limited.

More than one hundred signal boxes and other key operating points in Lancashire, Cheshire, the West Riding, and North Wales are connected to the new Control. Thirty-one special telephone circuits are in use, 16 of which are external and 15 for inter-communication.

Twenty-three miles of wire were used in fixing the installation; this excluded eight miles of special lineside cable laid between Godley and London Road Station.

Mr. J. Royston, L.N.E.R. District Superintendent for the Manchester District, has stated that the new Control is a great improvement on Godley. Working conditions are much improved by better lighting and ventilation, and an absence of outside noise. The new installation has taken nearly eight months to complete.

Doncaster, L.N.E.R., Collision Inquiry

The Ministry of Transport inquiry into the collision near Doncaster, L.N.E.R., on August 9 (see our August 15 issue) was opened in London on August 14. Sir Alan Mount, Chief Inspecting Officer of Railways, conducted the inquiry, assisted by Brigadier C. A. Langley.

The accident occurred when the 1.25 p.m. train from Kings Cross to Leeds ran into the rear of the 1.10 p.m. train, which had been standing at a signal waiting to draw into Doncaster Station. It was stated at the inquiry that there were about 700 passengers, some standing, in both trains; 18 were fatally injured, and 51 of the 120 injured passengers were detained in hospital.

The driver of the 1.10 p.m. train said that, after being held at the signal, he had some difficulty in restarting because of the rising gradient and curvature. He had to reverse his engine twice before getting away, and if he had been able to move at once the collision would not have been so serious.

Evidence was given by the fireman of the 1.25 p.m. train that when passing Balby Junction at about 40 m.p.h. he noticed a train in front, some 50 yd. away. He shouted to his driver, but remembered nothing more until picking himself up from the ground after the collision.

The signalman at Balby Junction said he accepted the first train (1.10 p.m.), but could not say whether it was accepted when he offered it forward. The train passed his box at 10-15 m.p.h. and stopped about 100 yd. away. At 4.34 p.m. he accepted the following train, but did not offer it forward. He agreed with Sir Alan Mount that he had made actually two mistakes, by giving the "out of section" signal, and then lowering the home signal into an occupied section without giving acceptance. At the time the indicator bell rang in his box, showing that the Bridge Junction signal was "off," he had been on the telephone, and on hearing the bell he lowered his down home signal.

He had omitted to reverse his road from down main to down goods line, as was his usual practice, in order to save delay.

Sir Alan Mount questioned the signalman as to how he had failed to see the rear of the stationary train, which had been standing for two or three minutes before the home signal was cleared. The signalman said that he was not looking in that direction, but was watching the following train.

The fact that the 1.10 p.m., train had not gone forward, had gone out of his mind. He frankly admitted his mistakes and said they were not due to the heat. He did not leave his box, and he was not reading a newspaper.

After hearing the signalman's evidence, Sir Alan Mount said that he would hear the rest of the witnesses in private. It was stated earlier in the inquiry that the signalman at Balby Junction had a good record, and had been in that box since 1940.

Presentation to Sir Charles Newton

A presentation of a pair of binoculars was made to Sir Charles Newton, retired Chief General Manager, L.N.E.R., by the General Managers of the other main-line railways at Charing Cross Hotel on August 12; and shown above are (left to right) Sir William V. Wood, L.M.S.R.; Sir Eustace Missenden, Southern Railway; Mr. Miles Beevor, L.N.E.R.; Sir Charles Newton; Mr. Marshall Clark, General Manager, South African Railways; and Sir James Milne, G.W.R.

Engineering & Marine Exhibition

It will be demonstrated at the Engineering & Marine Exhibition, which opens at Olympia, London, on August 28, and will remain open until September 13, that British industry, despite crippling controls and shortages of raw materials, fuel, and manpower, has both the resiliency and the initiative to weather the present storm.

Never before in the long history of this exhibition have the organisers had to plan their space on such ample lines. Space booked this year represents an increase of 45 per cent. on that of the exhibition of 1937, mostly taken by firms who have been regular supporters for years, although also represented will be many firms representing some of the newer industries which have developed since the war.

In the foundry section, which was started some years before the war, the contrast between the production methods of pre-war and post-war eras will be clearly shown, and the welding section, too, will reflect the considerable advances which have been made in this important branch of the engineering industry. Among the new sections will be one devoted to electricity.

In spite of the difficulties of arranging social and technical meetings at the present time, much attention is being paid to the accommodation and entertainment of the many technical associations which have made this exhibition a venue of their special outings for many years.

Colonel Bingham on British Transport

Colonel Sidney H. Bingham, Commissioner, The Board of Transportation, New York, returned to the United States this week after a visit to London to study London Passenger Transport Board methods.

During the course of his visit to London, he met Mr. Alfred Barnes, Minister of Transport, Sir Cyril Hurcomb, recently appointed Chairman of the British Transport Commission, and a number of leading British railway officers. Colonel Bingham is the first person from the railway service appointed by the Mayor of New York City to hold the position of Commissioner.

He was General Superintendent of the New York City Transport System. During the war he was well known in this country for his work in charge of supply and procurement for the invasion railway forces, and as Assistant Chief of Transportation, Military Railway Division, Eastern Theatre of Operations.

Colonel Bingham told a representative of *The Railway Gazette* that he had been greatly impressed in his talks with the Minister of Transport, and Sir Cyril Hurcomb, with the keen minds they were bringing to transport problems under nationalisation, and of the awareness which they had shown in conversation with him of the need for adopting a progressive policy. Colonel Bingham said it was realised that one of the major labour problems which would arise would be that connected with the co-ordination of pensions, and the establishment of a general scale.

He had found Sir Cyril Hurcomb deeply interested in such matters as the possibility of the greater use of diesel-electric traction on British railways, and in all other matters which might provide increased amenities and greater economy in working. He felt sure that the general body of railway executives, including those who had been opposed to the principle of nationalisation, would accept the position as it now presented itself, and would do their best to ensure that British transport was a success under its new form.

Swiss Railway Centenary Celebrations

Celebrations of the centenary of railways in Switzerland were held on August 9 at Zurich and Baden, the terminal points of the first railway opened entirely within the country. As announced briefly in our August 1 issue, guests of the Swiss Federal Railways travelled by special train from Berne to Zurich, where they were greeted by M. Celio, Head of the Postal & Railways Department.

M. Celio said that the railway had created modern Switzerland. Swiss railway history was characterised by the courage and daring of the pioneers who had overcome the exceptional difficulties of construction in a country of such varied topography. The railways had influenced and fortified the economic life of the country.

In the space of 100 years, the population of Zurich had increased from 17,000 to 370,000, and that of Baden from 2,700 to 11,000, to quote only the two towns first provided with railway communication. M. Celio referred also to the contribution of railway transport in developing the tourist industry, and recalled the fact that there were railway stations on the Jungfrau, at a height of 3,457 m., and on the Gornergratt, at a height of 3,082 m.

Dr. W. Meile, President of the General Management, Swiss Federal Railways, recalled some noteworthy dates in the history of the Swiss railway system. Speaking of financial matters, he pointed out that the railways had so many obligations towards the economy of the country as a whole, that it was not possible for them to earn an actual profit. One of the tasks of the future would be to establish a balanced economy for all means of transport, and to do everything possible to make every transport system self-supporting.

Dr. E. Branger, Director of the Rhaetian Railway, spoke on behalf of the private railway systems. He emphasised that it was necessary for the railways to enjoy assistance from the State to the same extent as other means of transport. Considerable expenditure was required for doubling railway lines, and installing the latest safety appliances, the cost of which at present would have to be borne by the railways themselves.

The ceremony was followed by a luncheon in the Kongresshaus. Among the speakers on this occasion was M. Lemaire, General Manager of the French National Railways Company, who brought greetings from France and congratulated the Swiss railways on their centenary, saying that they had stood as an example to the world of fine organisation and technical efficiency.

In the afternoon the journey was made to Baden in the guests' special train, and the special Centenary Train, the latter conveying passengers in period costumes. The two trains ran on parallel lines for a short distance in the neighbourhood of Wettingen.

At Baden, a pageant of transport was held, culminating with a reconstruction of the ceremony of August 7, 1847, when the Zurich-Baden Railway was opened.

San Paulo (Brazilian) Railway Company

A statement by the Chairman, Mr. George M. Booth, which is issued with the company's report, sets out the proposals for dealing with the £6,638,000 in sterling which may be received *in lieu* of bonds for the disappropriation of the railway by the Brazilian Government. It is understood that bonds have been issued, with interest from November 8, 1946, but a proposal has been submitted for the Federal Government to redeem these bonds by a payment from the Brazilian sterling balances in London.

According to the proposals outlined by the Chairman, in the event of the capital sum being received, the holders of the 5 per cent. redeemable stock will be given three months' notice of repayment at 102 per cent. plus interest. The 4 per cent., 5 per cent., and 5½ per cent. permanent debenture stocks can be repaid only after six months' notice given from January 1 or July 1, the due dates of interest, so that payment cannot now be made before July 1, 1948. The repayment of debentures will absorb some £2,410,000, leaving £4,258,000 for the proprietors of the company.

As soon as is possible, the board will take the necessary legal steps to pay off the £1,000,000 of 5 per cent. non-cumulative preference stock (on which the due final dividend of 2½ per cent. for the past year will be proposed at the meeting), and the ordinary stockholders will be repaid £1 for each £1 of stock held. The meeting will be held on August 26, but the passing of the accounts for 1946 and the consideration of the report will be adjourned until the accounts have been completed.

The Model Engineer Exhibition

The Model Engineer Exhibition was opened at the New Royal Horticultural Hall, Westminster, S.W.1, on August 20, and will remain open from 11 a.m. to 9 p.m. daily until August 30.

Mr. Percival Marshall, in welcoming guests on the opening day, said that the exhibition was in its 22nd year, and was not only grown up but had developed a middle-aged spread, as it had been necessary to utilise part of an additional floor to display a selection of loan models of considerable historical interest.

There has been a record entry this year of nearly 400 models. Among the railway exhibits in Class 1 (over "0" gauge) are several fine models of L.M.S.R. prototypes, including a 5-in. gauge coal-fired Class "5XP" locomotive entered by Mr. J. I. Austen-Walton, and 3½-in. gauge "Princess Royal" Pacifics, by Mr. W. J. J. England and Mr. N. E. Nicholson. In this section, also, Mr. F. R. Forest shows a 2½-in. gauge coal-fired L.N.E.R. "Flying Scotsman" Pacific.

In Class 2 ("0" gauge and under) Mr. E. C. Bide shows a modern G.W.R. train consisting of the 4-6-0 locomotive *King George V*, a passenger brake, and a 12-wheel sleeping saloon. Several entrants in this section have chosen historical prototypes.

The trade exhibitors' stands show how well the model-building industry has re-established itself since the war. A novelty in power units is a diesel engine for model ships, cars, or locomotives which weighs only 5 oz. A 50-ft. circular track is provided for demonstrations of model aircraft, speedboats, and racing cars.

Staff and Labour Matters

Railway Professional and Technical Staff

The decision of the Railway Staff National Tribunal has been published on the claim of the Railway Clerks' Association for a national agreement providing for salaries and other conditions of service for professional and technical staff employed by the main-line railway companies. The staff concerned are employed in the railway companies' engineering departments and as chemists and research workers.

The decision provides for professional and technical staff, also chemists and research workers, to be placed in three groups, for which minimum scales of salary are fixed, group " A " rising to £470 per annum at age 36, group " B " rising to £515 per annum, and group " C " rising to £573 per annum.

Minimum scales of pay for tracers also are awarded, and, on certain conditions of service which were included in the claim, the Tribunal decided as follows:—

Night Duty: Staff covered by the award whose rostered hours extend beyond 10 p.m. or commence before 6 a.m. to be paid time-and-a quarter during those hours.

Overtime and Sunday Duty: To be paid for on the same scales and subject to the same conditions as apply to railway clerical and supervisory staff.

Questions in Parliament

Transport Commission: Salaries

Mr. Ernest Davies (Enfield—Lab.) on August 13 asked the Minister of Transport what were the salaries and terms of employment of the full-time members appointed to the Transport Commission.

Mr. Alfred Barnes (Minister of Transport), in a written answer, stated: The salaries authorised for the posts of Chairman and of full-time members of the British Transport Commission are £8,500 and £5,000 a year, respectively.

Greenbank Goods Depot

Dr. S. Segal (Preston—Lab.) on July 28 asked the Minister of Transport whether he would arrange to keep open the Greenbank goods depot for a limited trial period in order to obviate delays in the passage of through goods traffic.

Mr. Alfred Barnes, in a written answer, stated: There is no proposal to close this depot. It normally handles full wagon loads and coal traffic only.

Mineral and Box Wagons

Mr. J. Baker White (Canterbury—C.) on July 28 asked the Minister of Transport what steps had been taken during the past four months to complete and bring into service partially completed mineral wagons recently standing at Martin Mill and Gatwick, and to repair box wagons standing on the Maldon West branch line.

Mr. Alfred Barnes stated in a written answer: I am making inquiries and will arrange for a statement to be circulated in the Official Report as soon as possible.

Railway Reservations for Organised Parties

Sir Waldron Smithers (Orpington—C.) on August 4 asked the Minister of Transport why, in view of the fact that reservations for railway journeys were restricted, seats had been reserved on the 10.57 a.m. train, which was crowded, from Waterloo to Portsmouth on July 18, 1947, for officials of the Racecourse Betting Control Board travelling to Esher, particulars of which had been sent to him; and if he would take steps to ensure that the regulations were observed in future.

Mr. Alfred Barnes stated in a written answer: The regulations in force permit the railway companies to make reservations by prior arrangement for organised parties.

Ventilation of District Railway Coaches

Dr. Somerville Hastings (Barking—Lab.) on August 4 asked the Minister of Transport whether, as promised, a re-examination had been made of ventilation in the older District railway cars used on the line between London and Barking; and whether any improvement had been found possible.

Mr. Alfred Barnes, in a written answer, stated: I am informed that the L.P.T.B. is experimenting with ventilating fans in order to improve conditions in the older cars.

Kings Cross-Waverley Service

Mr. J. J. Robertson (Berwick & Haddington—Lab.) on August 5 asked the Minister of Transport if he would state the figures revealed in the recent census of passengers using the 10 p.m. train from Waverley to Kings Cross, and the 10.15 p.m. train Kings Cross to Waverley, at the recently-suspended stops of Dunbar and Drem, respectively.

Mr. George Strauss (Parliamentary Secretary to the Ministry of Transport) in a written answer, stated: Before the stops were withdrawn the daily average number of passengers alighting at Drem from the 10.15 p.m. train from Kings Cross was seven. The daily average number joining the 10 p.m. from Waverley at Dunbar was three.

Locomotive and Wagon Shortage

Mr. J. A. Sparks (Acton—Lab.) on August 5 asked the Minister of Transport what were the principal factors likely to produce abnormal difficulties in railway transport operations during the coming autumn and winter months.

Mr. George Strauss stated in a written answer: The principal factor is likely to be the continuing shortage of locomotives and wagons, especially the latter. The effect of this shortage would, of course, be accentuated if weather conditions in the winter were exceptionally severe. Adverse effects on trade and industry can be mitigated by reducing the turn-round times of wagons at terminals and in particular by loading and unloading wagons on Saturdays at establishments where a 5-day week is being worked.

Increase in Railway Charges

Mr. T. E. N. Driberg (Maldon—Lab.) on August 11 asked the Minister of Transport if he would take steps, by means of advertising, broadcasts, or otherwise, to inform the public of the reasons for the increases in fares and so to forestall attempts by hostile propagandists to misrepresent them as a consequence of nationalisation.

Mr. George Strauss: I think that the statement the Minister of Transport made on August 5 in announcing the increase in railway charges sufficiently indicated the true causes of the need for such an increase, and it received wide publicity. I will, however, bear Mr. Driberg's suggestion in mind.

Viscount Hinchingbrooke (Dorset Southern—C.): While disclaiming any intention of being a hostile propagandist, may I ask the Parliamentary Secretary whether he is aware that as regards reduction in prices there is no difference in principle between a free railway system and a free vegetable market?

Earl Winterton (Horsham—C.): Will the Parliamentary Secretary give an undertaking that public money will not be spent in putting forward the views of the fatuous propagandists on the Government benches? May I have an answer to that question?

Mr. Strauss: Public money will only be spent in putting forward the facts when the public desires to have the facts and it is desirable that it should have them.

Mr. H. G. Strauss (English Universities —C.): Is it not quite clear that this increase is due to the Government's policy of inflation, whether or not that policy is consciously adopted by the Chancellor of the Exchequer?

Mr. G. R. Strauss: No, I do not accept that at all.

Several members rose to ask further questions, but the Speaker called the next question on the order paper.

Expenditure on Railway Improvements

Lt.-Colonel F. C. Byers (Dorset North—Lib.) on August 11 asked the Minister of Transport if he would state the expenditure which was to be incurred in the next two years in improving the railways, detailing in particular the amount of money which would be spent on electrification.

Mr. George Strauss: The Minister of Transport is making inquiries and will inform Colonel Byers of the result.

Colonel A. Gomme-Duncan (Perth—C.): Will the Parliamentary Secretary bear in mind that to date there is not a single yard of electric railway in Scotland?

Mr. Strauss did not reply.

Carriage of Fish

Mr. C. Osborne (Louth—C.) on August 11 asked the Minister of Transport if he was aware that, because of trade union demands, fish at Grimsby could not be accepted by the railway company after 3.30 p.m. and one train to 4 p.m., whereas at Hull fish was accepted up to 6 p.m.; and what steps he proposed to take to safeguard Grimsby dock trade which was only 65 per cent. of its pre-war volume.

Mr. George Strauss in a written answer stated: As the fish workers at Grimsby are now subject to the industrial agreements applicable to the dock workers there, and are employed under the provisions of the Dock Workers (Regulation of Employment) Order, 1947, their normal finishing time is 5 p.m. instead of 6 p.m. as formerly, and the railway company has found it necessary to advance by 30 minutes the latest time for acceptance of fish for despatch by rail.

Reserved Compartment on Waterloo Train

Mr. George Jeger (Winchester—Lab.) on August 12 asked the Minister of Transport whether he was aware that it was the practice to keep a first class compartment locked and labelled " not for public use " on the 4.35 train from Waterloo; and whether he would have that stopped and so allay the irritation of the ordinary citizens who were regular passengers on that train.

Mr. Alfred Barnes in a written answer stated: Careful inquiries by the railway company have not revealed irregular reservations on the 4.35 p.m. train from Waterloo. Apart from reservations for B.O.A.C. air passengers on Fridays, when an extra coach is added to the train, the only reservations recorded during May were one for a school vacation party, one for an invalid with attendants, and two for King's Messengers, all of which are permitted by the instructions in force.

Notes and News

Senior Principal or Principal Scientific Officer Required.—A senior principal or principal scientific officer is required in the fighting-vehicle design department of the Ministry of Supply at Chertsey, Surrey. See Official Notices on page 223.

Two Mechanical (Locomotive) Engineers Required.—Two mechanical (locomotive) engineers as district assistants, age between 25 and 30 years, are required by a British-owned railway in Brazil. Practical workshop and drawing office experience essential. See Official Notices on page 223.

Ministry of Supply—Professionally Qualified Engineers Required.—Professionally qualified engineers are required for experimental and development work in the Ministry's research, development, and design establishments, located mainly in the Midlands and the South of England. See Official Notices on page 223.

Assistant Traffic Superintendent Required.—An assistant traffic superintendent, between 25 and 35 years of age, is required by the Malayan Government Railway for one tour of three years, with possible permanency. Candidates must have had sound training and considerable experience of traffic operating and commercial work on a railway. See Official Notices on page 223.

L.M.S.R. Sailings on Heysham-Belfast Route.—The L.M.S.R. states that the recently-increased sailings on the Heysham-Belfast cross-channel route, which were to have been reduced after August 30, will remain in operation until further notice. Vessels will continue to sail from Heysham at 11.40 p.m. and from Belfast at 9.40 p.m. each weekday. Sailing tickets will be required up to and including Saturday, September 27.

Display of Nimonic Alloys.—For many years, the firm of Henry Wiggin & Co. Ltd., Birmingham, has specialised in the production of high-grade nickel alloys, and exhibits at the Engineering & Marine Exhibition, Olympia, this month, will include the Nimonic series. These high temperature materials, best known for their contribution to the development of the gas turbine in this country, will be demonstrated in the representation of a turbo jet, which will include part of a turbine rotor, with the turbine blades in position, and flame tubes. The turbine blades are made in Nimonic 80 and those parts subjected to the highest temperatures in the flame tubes are made from Nimonic 75 sheet. Other exhibits will include corrosion-resisting materials including Monel metal and Inconel.

Ruston & Hornsby Limited.—Mr. G. R. Sharpley, Chairman of Ruston & Hornsby Limited, said at the company's annual general meeting that the year under review had been characterised by shortages of all kinds. They had suffered severely also from the flooding in March, during which time the foundry and works engaged on small engine and locomotive production were completely shut down. They had almost completed, however, the rehabilitation and equipment of the two large shops at Lincoln and Grantham, which had been requisitioned during the war by the Admiralty. The company's order-book was much greater than ever before, and a large proportion of the orders were for export. In providing space and equipment for meeting the demand, they were handicapped by difficulties of manpower, housing, and raw materials. Subject to shortages being overcome, they saw before them some years of high activity, for the company's reputation for engineering excellence and reliability was never higher than at the present time.

Insulated Rail Containers.—The G.W.R. is to build at its Swindon Works, 20 heavily-insulated containers for the conveyance of ice cream, quick-frozen foods, dry ice, and pancreas. These containers will ensure traffic arriving at its destination in perfect condition, irrespective of the length of journey.

Costing Clerk Required.—A costing clerk (non-establishment), between 27 and 32 years of age, is required by the administration of Kenya & Uganda Railways & Harbours for the mechanical department, for one tour of 36 to 48 months, with possible permanency. Candidates must have a thorough knowledge of costing and modern cost system gained in up-to-date engineering Works. See Official Notices on pages 223.

Accounting Assistant Required.—An accounting assistant, not over 30 years of age, is required by the Government of Tanganyika Territory for the accounts department of the railways and port services for one tour of 24 to 36 months in the first instance. Candidates should have had good general accounting experience on a home railway, either in the traffic department or in mechanical engineering. See Official Notices on page 223.

Heavy Shunting Locomotive for Dock Work.—In the description of the Hunslet 0-6-2 tank locomotives recently delivered for heavy shunting at the Port of Calcutta in our August 1 issue, it was stated that the side buffers and central drawbars were of standard type and both had Spencer Moulton rubber springs. We are informed that the side buffers were manufactured by George Turton, Platts & Co. Ltd., and fitted with their compound steel springs.

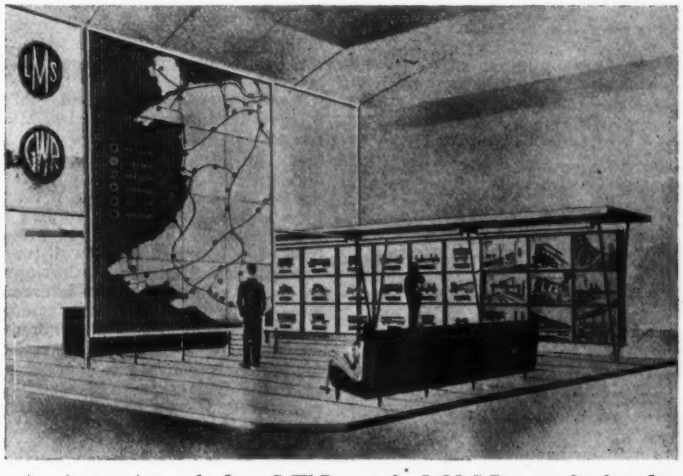
Industrial Wales Exhibition.—The part played by the G.W.R. and the L.M.S.R. in the industrial life of Wales will be strikingly illustrated at the Industrial Wales Exhibition, which opens at Olympia on August 28. The joint railway exhibit, shown in the illustration below, will take the form of a large map of Wales, on which illuminated panels will show the industrial and various other activities of the Principality, and as each panel lights up, the railway stations handling a particular traffic will be indicated by electric bulbs. In addition, there will be a display of silhouettes depicting the types of wagons and containers used by the railway companies in transporting Welsh freights, and a series of photographic enlargements showing methods of handling goods at the docks.

North Western Road Car Co. Ltd.—Mr. W. T. James, Chairman of the North Western Road Car Co. Ltd., at the company's annual general meeting, welcomed the House of Lords amendment to the Transport Bill providing that Government operators of omnibus services should be subject to the control of the Traffic Commissioners. Another provision inserted during the passage of the Bill through the Lords ensured that there should be a public inquiry before area schemes for passenger road transport were made. Mr. James said they now had a formula to go on in respect of compensation for omnibus services taken over, but by no stretch of imagination could the basis of compensation be regarded as adequate.

The Superheater Co. Ltd.—At the annual general meeting, Sir Alexander McColl, Chairman, said that during the year their output, with less man-hours per ton, exceeded that of any previous year. Last year, hope was expressed that they would increase their exports, and he was glad to report that this had been done, the value being 184 per cent. of the best pre-war year. Their subsidiary companies, T. Sugden Limited and the Superheater Co. (Australia) Pty. Ltd., continued to make progress, and recently a new subsidiary, Heat Exchangers Limited, had been formed to develop heat exchangers for gas turbines, a field in which there was much room for research and one which the board considered promising.

Olympia Display of New Pumps and Fuel-Injection Equipment. — Prominent among a complete range of products shown by Bryce Fuel Injection Limited at the Engineering & Marine Exhibition will be a new volumetric metering pump for delivering fluid at a constant volume regardless of viscosity and pressure or suction. In this pump, there is micro-volumetric control of the fluid at all times, and the pump is gearless, gives a pulseless flow, is adjustable for setting at once, and

Joint Railway Exhibit at Olympia



An impression of the G.W.R. and L.M.S.R. stand for the Industrial Wales Exhibition at Olympia (see paragraph above)

has a range up to 50 gal. an hour. A selection of standard Bryce fuel-injection pumps will be shown, such as single-cylinder types, injectors and nozzles, etc., and also a new design of multi-cylinder pump for high-speed engines. Finally, there will be an all-speed hydraulic governor for engines operating over a wide speed range, such as those used for locomotives, railcars, road transport vehicles, cranes, etc.

Maidstone & District Motor Services Limited.—Mr. R. P. Beddow, Chairman of Maidstone & District Motor Services Limited, said at the company's annual general meeting that all their express carriage services had been restored. These services would be increased further when additional rolling stock was available. Deliveries of new vehicles were well behind schedule, and prices were very high. Another difficulty with which the company had to deal was the problem of peak-period traffic. Since the war there had been a concentration of the rush hours, particularly in the late afternoon, and this effect was seen in the neighbourhood of market towns, as well as in industrial areas.

Iron and Steel Production.—Some comparative figures relating to the production of pig iron and steel ingots and castings are given below:—

STEEL INGOTS AND CASTINGS

(000's of tons)

	1947		1946	
	Weekly average	Annual rate	Weekly average	Annual rate
First quarter ...	216	11,231	243	12,617
Second quarter	244	12,694	252	13,111
June	254	13,206	240	12,475
July	212	11,007	226	11,759

PIG IRON

	1947		1946	
	Weekly average	Annual rate	Weekly average	Annual rate
First quarter ...	134	6,989	146	7,566
Second quarter	142	7,363	151	7,827
June	144	7,501	152	7,878
July	144	7,460	147	7,645

Yorkshire Railway Bridge (L.M.S.R.) to be Rebuilt.—A contract has been placed by the L.M.S.R. with the firm of Caffin & Co. Ltd., 25, Craven Street, London, W.C.2, for the rebuilding of a railway bridge at Kildwick, Yorks., which carries the Leeds-Carlisle main line over Eastburn Beck. Owing to the fact that the centre pier of the existing structure was damaged by floods last winter, the track has had to be supported by a temporary pier embedded in concrete set in the river bed alongside the old pier, and the present scheme is to replace the existing bridge by an all-steel span 75 ft. in length. This new span is one of a number kept in hand during the war for emergency repair of bomb damage, and by its use the considerable delay which might otherwise occur through shortage of supplies will be avoided.

Big G.W.R. Port Talbot Scheme.—A contract has been let by the G.W.R. for large railway engineering works to serve the new strip mills at Margam, Port Talbot. The work involves the diversion and doubling of nearly 1½ miles of railway, the provision of two new marshalling yards with subsidiary lines and sidings totalling 24 miles of track, the construction of six large bridges with spans varying between 108 ft. skew span and 29 ft. square span, two viaducts totalling 17 spans and 500 yards of retaining walls, the laying of hundreds of yards of pipes varying from 6 in. to 6 ft. in diameter for draining the large area of marsh land covered by the site, the construction of two small bridges over the drainage waterways, and the extension of the existing brick and masonry culverts. The work, which is expected to be completed in two years, will at the peak occupy over 300 men and will entail the use of 800 tons of steel, 2,000,000 bricks, and over 1,000 steel piles. In addition, to cope with the increased iron ore passing through the G.W.R.'s Port Talbot Docks the company is to lengthen its main discharging quay and provide five hydraulic pumps for supplying power on the quayside, as well as impounding pumps with a capacity of 66,000 gallons a minute for maintaining the water level in the dock. The total cost of these schemes is expected to exceed £600,000.

Epicyclic Gearbox Exhibits.—Among the firms represented at the Engineering & Marine Exhibition at Olympia, London, which opens on August 28, will be the Self-Changing Gear Co. Ltd. This firm specialises in the manufacture of epicyclic gearboxes for rail, road, and marine purposes, and included in its display will be types transmitting approximately 100, 150, and 250 h.p. Another exhibit will consist of a gearbox incorporating a locomotive final-drive and reverse gear designed specially for shunting duty.

Partition of India.—The boundary commissions which have been studying the partition line between the Dominions of India and Pakistan in Bengal and the Punjab announced their finding on August 17. Calcutta, in Bengal, is assigned to India, and Lahore, in the Punjab, to Pakistan. The allocation of Lahore to the Dominion of Pakistan was shown by the provisional boundary line on the map of the North Western Railway system published in our issue of August 8, but a change in the course of the final line has resulted in the transference of Amritsar from Pakistan, as shown in our map, to the Dominion of India.

Public "At Home" at Longmoor Training Centre.—On September 3 members of the public will be able to visit the Royal Engineers Transportation Training Centre at Longmoor and to inspect the numerous technical and operating instructional activities carried on there. Free transport will be provided on the Longmoor Military Railway between Longmoor, Liss, and Bordon, and there will be footplate trips every 15 min. from Longmoor Downs Station. The various exhibits and demonstrations will be in progress from 12.30 p.m. to 6 p.m. Admission to certain events will be 6d. a head, and the money will be given to military charities. An illustrated souvenir programme will be available.

Keith Blackman Limited.—Presenting his review of the year ended March 31 last at the annual meeting of Keith Blackman Limited, the Chairman & Managing Director, Mr. M. Burningham, said that the period had been the most difficult in the company's history. They had set out enthusiastically to increase production, both for home and export trade, but serious supply bottlenecks developed very soon, and although they had succeeded in maintaining output at a satisfactory level, it was not sufficient to keep abreast of a record influx of orders. Further hold-ups of materials and components resulted from the fuel crisis. On March 13 this year the flooding of the River Lea inundated all the company's buildings except the office block, but as a result of strenuous efforts by all the staff, production was again in full swing in less than a week. Taking these factors into consideration, the Chairman considered that the results for the year were not unsatisfactory, the profit of £98,900 comparing with £111,039 in the preceding 12 months.

Report on L.N.E.R. Gidea Park Collision.—In the report by Lt.-Colonel F. Woodhouse on the collision at Gidea Park, L.N.E.R., on January 2 (see our January 10 issue), it is stated that the direct cause was the serious mistake of a driver in continuing to run at a fairly high speed while uncertain of his location and in ignorance of signals which

British and Irish Railway Stocks and Shares

Stocks	Highest 1946	Lowest 1946	Prices Aug. 19, 1947	Prices Rise Fall
G.W.R.				
Cons. Ord.	61½	54½	54½xd	—
5% Con. Pref. ...	126½	107	115½xd	— ½
5% Red. Pref. (1950)	106½	102½	98½xd	—
5% Rt. Charge ...	140½	122½	128½	—
5% Cons. Guar. ...	137½	118½	126½xd	—
4% Deb.	129½	106	118½	—
4½% Deb.	129½	107	119	+ ½
4½% Deb.	130½	114	120½	—
5% Deb.	142½	125	130½	—
2½% Deb.	95½	81½	88½	—
L.M.S.R.				
Ord.	30½	26½	27½xd	— ½
4% Pref. (1923) ...	64	52½	58xd	—
4% Pref.	86	75½	79xd	—
5% Red. Pref. (1955)	105½	97	97½	+ 1
4% Guar.	108½	100	99½xd	+ ½
4% Deb.	120	103	110	+ ½
5% Red. Deb. (1952)	108½	105½	101½	—
L.N.E.R.				
5% Pref. Ord. ...	7	5	6½	—
Def. Ord.	3½	2½	3½	—
4% First Pref. ...	59½	50½	54	—
4% Second Pref. ...	29½	25½	27½	—
5% Red. Pref. (1955)	104	97	94½	—
4% First Guar. ...	107	98	97½	—
4% Second Guar. ...	101	90	92½	—
3% Deb.	104	87½	95	—
4% Deb.	119½	102½	109½	+ ½
4½% Sinking Fund Red. Deb. ...	107½	101½	99½	—
SOUTHERN				
Pref. Ord.	79½	70	71½xd	—
Def. Ord.	24	19½	22½	— ½
5% Pref.	125½	107	114½xd	—
5% Red. Pref. (1964)	115½	106½	106½xd	—
5% Guar. Pref.	137½	119	126½xd	—
5% Red. Guar. Pref. (1957)	115½	107½	105½xd	—
4% Deb.	129½	105½	118½	—
5% Deb.	139½	125½	128½	—
4% Red. Deb. (1962-67)	113½	104½	104½	—
4% Red. Deb. (1970-80)	115½	104½	105½	—
FORTH BRIDGE				
4% Deb.	109	103	99½	—
4% Guar.	105	102	95½	—
L.P.T.B.				
4½ "A"	133½	120½	122½	—
5% "A"	142½	130½	131½	—
3% Guar. (1967-72)...	108	98½	97	— 1
5% "B"	128½	117½	117½	—
"C"	64½	56½	60½xd	—
MERSEY				
Ord.	34	30	32½	—
3% Perp. Pref. ...	76	69	69½	—
4% Perp. Deb. ...	117½	103	108	—
3% Perp. Deb. ...	98	81	90½	—
IRELAND*				
BELFAST & C.D.				
Ord.	8½	6	7½	—
G. NORTHERN				
Ord.	41½	30½	26	—
Pref.	63½	52	40	— 6
Guar....	97½	78½	82½	—
Deb.	107	97½	98½	—
IRISH TRANSPORT				
Common	19/2½	16/9	14/3	—
3% Deb.	107	100	100½	—

* Latest available quotation

OFFICIAL NOTICES

Crown Agents for the Colonies

APPLICATIONS from qualified candidates are invited for the following post:—

ACCOUNTING ASSISTANT required by the Government of Tanganyika Territory for the Accounts Department of the Railways and Port Services for one tour of 24 to 36 months in the first instance. Salary according to qualifications, experience, and war service in scale £300 × £18 to £480 a year, plus cost-of-living allowance of £60 a year for single men and between £95 and £130 a year for married men, according to number of children. A separation allowance is also payable in certain circumstances. Outfit allowance of £30 payable in United Kingdom on first appointment, plus further sum not exceeding £30 payable in Tanganyika. Free passages and quarters. Candidates not over 30, should have had a secondary education and good general accounting experience on a home railway, either in the traffic department on compilation of station accounts or in the mechanical engineering department. Apply at once by letter stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M/N/18015 on both letter and envelope.

REQUIRED by important British-owned Railway in Brazil, 2 Mechanical (Locomotive) Engineers as District Assistants. Practical workshop and drawing office experience essential, and experience of foreign or colonial railway an advantage. Experience in handling labour desirable. Candidates should have passed Associate Membership Examination of the Institution of Mechanical Engineers, or equivalent. Commencing salary £600/£700 per annum, according to qualifications. Age limit 25/30 years. Single men only need apply. Write giving full particulars of past experience.—Write Box "C.849," c/o STREETS, 110, Old Broad Street, London, E.C.2.

THE "PAGET" LOCOMOTIVE. Hitherto unpublished details of Sir Cecil Paget's heroic experiment. Eight single-acting cylinders with rotary valves. An application of the principles of the Willans central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. *Price 2s. Post free 2s. 3d.*

THE RAILWAY SYSTEM OF JAMAICA. A general description of the system and its traffics, with an account of economic problems; the motive power used; and some features of operation. By H. R. Fox, B.Sc., M.Inst.C.E., General Manager, Jamaica Government Railway. Reprinted from *The Railway Gazette*, January 5 and 12, 1945. *Price 1s. Post free 1s. 2d.*

Crown Agents for the Colonies

APPLICATIONS from qualified candidates are invited for the following post:—

COSTING CLERK (non-establishment) required by the Administration of Kenya and Uganda Railways and Harbours for Mechanical Department for one tour of 36 to 48 months, with possible permanency. Salary according to age, qualifications and experience in scale £420 to £540 a year, plus cost-of-living allowance of £40 a year for single man and £95 or £122 10s. a year for married man. Outfit allowance up to £60. Free passages and quarters. Candidates, 27 to 32, must have thorough knowledge of costing and modern cost system gained in an up-to-date engineering works. Knowledge of punched card accounting or costing in mechanical department of a home railway an advanntage. Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M/N/18350 on both letter and envelope.

THE Civil Service Commissioners invite applications for the post of Senior Principal Scientific Officer or Principal Scientific Officer in the Fighting Vehicle Design Department of the Ministry of Supply at Chertsey, Surrey.

Candidates should be British subjects born on or before August 1, 1915. They must have an Honours Degree in mechanical engineering, Corporate Membership of the Institution of Mechanical Engineers or an equivalent qualification, together with practical works experience and at least five years' experience in a responsible position on design and development work. Experience in the specialised field to be covered would be an advantage, but is not essential provided that the candidate has adequate experience in a similar field, such as the suspension of heavy automotive chassis, railways, etc. A knowledge of shock absorbers and tyres, both solid and pneumatic, would be of advantage.

The successful candidate will be required to direct the design and development of transmissions, suspensions, and steering mechanisms of tracked and wheeled military vehicles.

The appointment is permanent with superannuation benefits under the Federated Superannuation System for Universities and, depending upon the experience and general suitability of the candidate selected, will be graded as Senior Principal Officer or Principal Scientific Officer on the following provincial scales:—

Senior Principal Scientific Officer: £1,220 × £50 to £1,420 (men).

Principal Scientific Officer: £850 × £30 (and later by £35) to £1,140 (men).

Rates for women are somewhat lower.

Forms of application are obtainable from the SECRETARY, CIVIL SERVICE COMMISSION, Scientific Adviser's Branch, 27, Grosvenor Square, London, W.1, quoting No. 1968, to whom completed forms must be returned not later than October 2, 1947.

Crown Agents for the Colonies

APPLICATIONS from qualified candidates are invited for the following post:—

ASSISTANT TRAFFIC SUPERINTENDENT required by Malayan Government Railway for one tour of three years, with possible permanency. Salary according to age, qualifications and experience in scale $400 a month, rising by annual increments of $20 a month to $600 a month, plus cost-of-living allowance of $90 to $130 a month according to dependents. (Malayan dollar = 2s. 4d.) Free passages. Outfit allowance £60. Children's allowances at the rate of $50 a month for the first child and $35 for the second. Candidates, aged 25 to 35, must have had sound training and considerable experience of traffic operating and commercial work on a railway, with sound knowledge of railway rules and regulations and principles of station accounting. Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M/N/18302 on both letter and envelope.

MINISTRY OF SUPPLY. Professionally qualified Engineers are required for experimental and development work in the Ministry's Research, Development and Design Establishments located mainly in the Midlands and the South of England.

Candidates must be natural born British subjects of British parents.

Applicants must have received a full professional training and have obtained, or be eligible for, corporate membership of the Institution of Civil, Mechanical, or Electrical Engineers, or be an Associate Fellow of the Royal Aeronautical Society.

Successful applicants may have an opportunity to compete for permanent posts at a later date provided they are able to satisfy the conditions laid down at the date of the competition.

The duties of the appointments cover nearly all branches of engineering and give opportunities for experience on work of an advanced nature using the most modern techniques and equipment. The fields covered include aircraft and associated equipment; gas turbine engines of all types; weapons for all services; radar, telecommunications and electronics; wheeled and tracked vehicles; bridging; earth moving equipment, etc.

Salaries will be paid according to age, qualifications and experience within the following inclusive ranges which are the provincial rates for men:—

Range I	£997 to £1,192
Range II	£720 to £960
Range III	£470 to £720

Salaries in the London area are slightly higher.

Write quoting C 482/47A to Ministry of Labour and National Service, Technical and Scientific Register, Room 171, York House, Kingsway, W.C.2. for application form.

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he was unable to see. Failure to give the driver definite warning, by the explosion of a detonator at a distant signal, that the stop signals were against him, contributed indirectly to the accident. It is recommended in the report that all busy sections of the line in areas where fogs are frequent should be provided with up-to-date automatic train-control apparatus.

The South Wales Transport Co. Ltd.—Revenues for the year, after deducting all working and administrative expenditure, amounted to £43,385, making, with £9,140 brought in, a total available for distribution of £52,525. The directors recommend a dividend of 6 per cent. on the cumulative preference shares, and of 10 per cent. on the ordinary shares, leaving, after provision for income tax, a balance of £24,592 to be carried forward. At the annual general meeting of the company, the Chairman, Mr. R. W. Birch, referred to the practical co-ordination which had been achieved between private and municipal enterprise in the districts served by the company. It would seem a great pity to disturb these arrangements by any attempts at nationalisation such as were contemplated in the Transport Bill. The whole Bill, said the Chairman, was so extremely unfair, and had been steam-rollered through the House of Commons at such a pace, with such inadequate consideration, that, so far from providing the solution to the alleged problems of transport organisation in this country, it bade fair, if passed into law, to raise such a crop of fresh problems as would stultify all progress in the industry for a decade or more.

War Service of G.W.R. Restaurant Car Commemorated.—Bronze plaques have just been fitted to the historic G.W.R. restaurant car, No. 9673, to commemorate its service in the wartime special train used by Mr. Churchill, the British Cabinet, and American and British Service Chiefs; and in France and Germany by General Eisenhower as part of his mobile headquarters during the Second Front campaign. Attendant Frank Brookman, who was responsible for the sleeping and feeding arrangements on the special train, will be in charge of the car, which now forms part of the "Torbay Express." The plaques bear the following words:—

This restaurant car formed part of the special G.W.R. train which was used in this country by members of the British, American and other Allied Service Chiefs, and during the operations in Europe became the mobile headquarters of General of the Army Dwight D. Eisenhower, Hon. G.C.B., O.M., Supreme Commander of the Allied Expeditionary Force in Western Europe, and his staff until the close of hostilities in 1945.

Antofagasta (Chili) & Bolivia Railway Co. Ltd.—The gross receipts of the company in the year ended December 31 last were £1,786,216, an increase of £187,594. The increase was due to the higher tariffs in force, as the volume of traffic handled showed a reduction. Goods traffic, at 1,137,538 tons, was 79,561 tons lower, but receipts rose by £188,826 to £1,467,662. The number of passengers carried decreased by 16,294 to 567,808, although receipts from this source were £14,348 higher at £136,818. Working expenses increased from £1,348,575 to £1,510,145, leaving net receipts of £276,071. After deduction of fixed charges, and a preference dividend of 2½ per cent. in respect of 1945, paid on February 7 last, there is a balance for the year of £39,088, compared with £407,009 brought in. The directors have declared a dividend of 2½ per cent., less income tax at 9s. in the £, on the 5 per cent. cumulative preference stock, being the balance of dividend payable in respect of the year 1936. It is proposed to carry forward the balance of £418,597.

Western Welsh Omnibus Co. Ltd.—Discussing the effects of regulating the affairs of the company from a central office in Whitehall, under the provisions of the Transport Bill, Mr. J. S. Wills, Chairman of the Western Welsh Omnibus Co. Ltd., said at the annual general meeting that costs inevitably would rise, and fares with them. The standard of service to passengers would diminish as the administration progressively lost touch with local opinions and requirements. While the Bill provided certain safeguards against the ratification by the Minister of Transport of undesirable schemes, Mr. Wills considered that existing machinery of this type was not always entirely satisfactory. He quoted the case of Stevenage as an example of a public inquiry which had ended in a secret report to the Minister concerned.

Railway Stock Market

Stock markets have reflected conflicting currents, and for once failed to take their cue from British Funds, despite a good rally in the latter which followed official support for short-dated stocks. Compared with 80 recently, both 2½ per cent. Consols and Treasury Bonds are now around 84, and the impression is that the Government is likely to make every effort to prevent the yield on British Funds going to a level in excess of 3 per cent. Had it not been for crisis perplexities, leading industrial shares doubtless would have staged a good rally. Instead, buying centred on gold-mining shares, which have scored a general advance, although best levels were not held, much of the demand being purely speculative and based on vague talk of devaluation of sterling and of prospects of a higher price for gold. Nevertheless, it is true that in contrast with industrials, gold-mining shares do not carry the same uncertainty arising from the economic crisis.

Fears that it may prove impossible to accelerate American aid have increased the view that an autumn Budget may prove inevitable, with further restrictions and perhaps new schemes for limiting dividends or profits. Iron and steel shares have lost further ground owing to news that iron and steel nationalisation is to be brought up for discussion at the Trade Union Congress. The marking down of values in this section has been indiscriminate, extending to shares of engineering, locomotive building, and many other companies which generally are believed to be outside the nationalisation threat.

Home rails became less active, but recent gains have been held in many cases. Following the quiet institutional buying which has persisted over a long period, some stocks do not appear to be in good supply in the market. Owing to the protection afforded by the take-over prices, there is now virtually no distinction as to status between the various classes of home rail stocks. It will be noted that debentures and senior preference stocks are generally at a larger discount to take-over prices than the junior or equity stocks. This is due partly to the fact that the lower prices of the junior stocks give them greater appeal to the general body of investors as a means of acquiring an interest in home rails; but the level of junior stocks also appears to reflect the assumption that they offer the possibility of a number of pleasant surprises as regards the final dividends in respect of the current year.

Home rails still rank as an attractive means of acquiring an interest in gilt-edged; while they also offer excellent prospects of approximating to the take-over levels by the end of the year. At the same time they are a good refuge for money during the existing economic crisis. A point sometimes overlooked is that the Government has not only to fix the rate of interest on British Transport stock in accordance with the conditions ruling in the gilt-edged market at the time of issue, but there is also a moral obligation to make the terms such that there is unlikely to be a heavy fall in the market price after it is exchanged for home railway stock. Most holders doubtless would be satisfied if the rate of interest were 3 per cent., but even so, in the early stages there would be no doubt a fair amount of selling on the part of those who bought home rails because of the scope for capital appreciation. Nevertheless, it is contended that the interest rate of British Transport stock should be such as to ensure that any fall in price resulting from quick-turn sales would not be permanent.

Argentine rails have tended to strengthen on confidence that opposition to the share-out terms is unlikely to develop, and that debenture stocks therefore probably will be paid off at the end of October. The assumption in the market is that the bulk of the money may very well go into British Funds and home rails, and that this may result in a sharp advance in the latter. This week has shown only fractional movements in Argentine rails, although ordinary or equity shares seem moderately priced in many instances, and may have interesting possibilities in the course of the next few months.

There was a revival of activity in Brazilian rail stocks following the San Paulo directors' statement indicating the possibility that Brazil may pay for the railway in sterling. Market views as to the full amount that will be received for each £100 of ordinary stock vary a good deal and range up to £200 (compared with the present price of £160), and the assumption is that at the meeting on Tuesday next it may be possible for a more definite indication to be given to stockholders.

Leopoldina improved to 13¾ and Great Western of Brazil shares to 80s., but best levels were not held. In other directions Canadian Pacifics came back to 16¾ in view of the big fall in net earnings, and the fear that it may be decided not to pay an interim dividend.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1945/46	No. of Week	Aggregate traffics to date: Totals 1946/7	Aggregate traffics to date: Totals 1945/6	Aggregate traffics to date: Increase or decrease	Shares or Stock	Prices: Highest 1946	Prices: Lowest 1946	Prices: Aug. 19, 1947
				£			£	£	£				
South & Central America	Antofagasta	834	10.8.47	39,950	+ 11,290	32	1,295,210	1,026,790	+ 268,420	Ord. Stk.	11	10½	11
	Arg. N.E.	753	9.8.47	ps.277,800	−ps.71,300	6	ps.1,783,600	ps.1,919,200	− ps.135,600	,,	17	5	11
	Bolivar	174	July, 1947	$98,317	− $9,349	30	$773,180	$760,024	+ $13,156	6 p.c. Deb.	6½	5½	16½
	Brazil	—	—	—	—	—	—	—	—	Bonds	30	26	32½
	B.A. Pacific	2,771	19.7.47	ps.2,450,000	+ps.200,000	3	ps.6,275,000	ps.6,488,000	− ps.213,000	Ord. Stk.	8½	5½	11
	B.A.G.S.	5,080	9.8.47	ps.3,355,000	+ps.111,000	6	ps.19,721,000	ps.19,996,000	− ps.275,000	Ord. Stk.	16	10½	17½
	B.A. Western	1,924	9.8.47	ps.1,347,000	+ps.202,000	6	ps.7,689,000	ps.6,861,000	+ ps.828,000	,,	19	9½	22½
	Cent. Argentine	3,700	9.8.47	ps.3,412,100	+ps.238,680	6	ps.18,639,135	ps.18,537,535	+ ps.101,600	,,	10½	7½	18½
	Do.	—	—	—	—	—	—	—	—	Dfd.	6	4½	14
	Cent. Uruguay	970	9.8.47	27,623	− 4,319	6	190,318	212,424	− 22,106	Ord. Stk.	8½	3½	19
	Costa Rica	262	Apr., 1947	33,865	− 83	44	286,765	286,820	− 55	Stk.	15	12	10½
	Dorada	70	July, 1947	33,000	− 2,100	31	212,800	221,375	− 8,575	1 Mt. Deb.	102½	99½	108
	Entre Rios	808	9.8.47	ps.438,000	+ps.38,200	6	ps.2,454,300	ps.2,505,200	− ps. 50,900	Ord. Stk.	9	5½	11
	G.W. of Brazil	1,030	9.8.47	27,700	+ 3,800	32	1,014,400	880,500	+ 133,900	Ord. Stk.	26/6	20/−	4
	Inter. Ctl. Amer.	794	June, 1947	$1,002,064	+ $199,162	26	$6,902,843	$5,657,516	+ $1,245,327	—	—	—	—
	La Guaira	22¼	July, 1947	$100,778	− $27,921	30	$785,160	$822,241	− $37,081	5 p.c. Deb.	70	58	84½
	Leopoldina	1,918	9.8.47	72,491	+ 8,016	32	2,084,532	1,806,536	+ 277,996	Ord. Stk.	5	3½	13½
	Mexican	483	31.5.47	ps.1,464,000	+ps.459,100	22	ps.7,706,200	ps.13,441,600	+ ps.5,220,000	Ord. Stk.	1¼	¾	¾
	Midland Uruguay	319	June, 1947	17,386	− 2,592	52	203,575	224,254	− 20,679	—	—	—	—
	Nitrate	382	15.8.47	10,081	+ 2,750	32	145,136	135,362	+ 9,774	Ord. Sh.	83/9	71/3	75/-
	N.W. of Uruguay	113	June, 1947	5,359	+ 304	52	67,160	66,419	+ 741	—	—	—	—
	Paraguay Cent.	274	25.7.47	₲75,097	+ ₲15,672	4	₲202,849	₲228,044	− ₲25,195	Pr.Li.Stk.	78½	60	44½
	Peru Corp.	1,059	July, 1947	162,690	+ 11,788	4	162,690	150,902	+ 11,788	Pref.	16½	8¾	8¾
	Salvador	100	Apr., 1947	c145,000	+ c6,300	44	c1,483,000	c1,393,700	+ c89,300	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	119½	52½	158½
	Taltal	156	July, 1947	5,585	+ 1,790	4	5,585	3,795	+ 1,790	Ord. Sh.	22/6	15/3	17/-
	United of Havana	1,301	10.8.47	70,299	+ 17,471	6	363,982	326,860	+ 37,122	Ord. Stk.	2	1¾	2
	Uruguay Northern	73	June, 1947	1,176	− 43	52	16,681	20,642	− 3,961	—	—	—	—
Canada	Canadian National	23,535	June, 1947	9,348,000	+1,447,250	26	53,060,250	46,539,250	+ 6,521,000	—	—	—	—
	Canadian Pacific	17,037	14.8.47	1,516,750	+ 6,650	32	47,663,500	43,696,000	+ 3,967,500	Ord. Stk.	25¼	16¾	16¾
Various	Barsi Light†	202	July, 1947	34,095	− 2,220	18	114,300	109,700	+ 4,600	Ord. Stk.	123½	111	110½
	Beira	204	June, 1947	99,433	+ 20,525	37	828,897	676,166	+ 152,731	—	—	—	—
	Egyptian Delta	607	20.8.47	16,791	− 887	15	179,814	181,642	− 1,728	Prf. Sh.	9¼	5	6½
	Manila	—	—	—	—	—	—	—	—	B. Deb.	75	60	72½
	Mid. of W. Australia	277	June, 1947	16,351	− 329	52	202,351	208,970	− 6,619	Inc. Deb.	85	70	75
	Nigeria	1,900	May, 1947	376,824	− 32,267	9	731,208	761,991	− 30,783	—	—	—	—
	Rhodesia	2,445	June, 1947	569,518	+ 35,926	37	4,978,485	4,600,382	+ 378,103	—	—	—	—
	South African	13,323	12.7.47	1,237,327	+ 12,149	15	18,244,165	16,098,260	+ 2,145,905	—	—	—	—
	Victoria	4,774	Apr., 1947	776,548	− 411,075	43	—	—	—	—	—	—	—

† Receipts are calculated @ 6d. to the rupee